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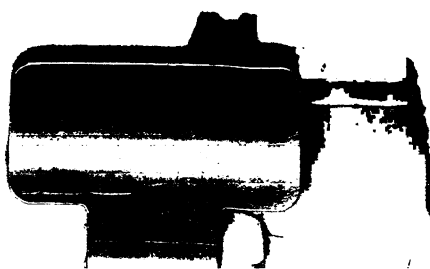
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PROCEEDINGS
OF THE
Sixth Annual Convention

OF THE
American Association
of Manufacturers of
Sand-Lime Products

BUFFALO, NEW YORK
DECEMBER 6-7
1909

ABRIDGED REPORTS OF THE FOURTH AND FIFTH
CONVENTIONS



PROCEEDINGS
OF THE
SIXTH ANNUAL CONVENTION
OF THE
AMERICAN ASSOCIATION
OF
MANUFACTURERS OF SAND-LIME
PRODUCTS

HELD AT BUFFALO, NEW YORK
DECEMBER 6-7, 1909.

S. O. GOHO, President
FRED K. IRVINE, Secretary

Together with Abridged Reports of the Fourth and
Fifth Conventions.

REVISION COMMITTEE
S. O. GOHO, Harrisburg, Pa. W. E. PLUMMER, Jr., Buffalo, N. Y.
FRED. K. IRVINE, Chicago, Ill.

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BY

**AMERICAN ASSOCIATION OF MANUFACTURERS OF
SAND-LIME PRODUCTS.**

THOSE ACTIVELY PARTICIPATING.

- S. O. Goho, Allen G. Walton, R. J. Walton, Jr., and John E. Ericson,
Hummelstown Brownstone Co., Waltonville, Pa.
J. S. Palmer, Sebewaing Sandstone Brick Co., Sebewaing, Mich.
Raleigh W. Holden, Rochester Composite Brick Co., Rochester, N. Y.
John L. Jackson, Saginaw Sandstone Brick Co., Saginaw, Mich.
W. H. Crume, Crume Brick Co., Dayton, O.
E. M. Loewenthal, Rockaway Brick Co., Rockaway, N. J.
E. P. Bacon, Penbryn Brick Co., Bridgeton, N. J.
Oscar Gross, Sioux Falls Press Brick Co., Sioux Falls, S. D.
F. B. Allan, J. O. Mercier, Toronto Indestructible Brick Co., Toronto, Can.
Walter Godart, Belt Line Brick Co., Minneapolis, Minn.
John Heimlech, LeRoy Lime Works, LeRoy, N. Y.
L. W. Penfield, W. J. Carmichael, American Clay Machinery Co., Wil-
loughby, O.
L. Buchheit, Mitchell Lime Co., Mitchell, Ind.
W. R. Strong, Montana Granite Brick Co., Helena, Mont.
A. Berg, The Berg Machinery Manufacturing Co., Ltd., Toronto, Can.
R. F. Kremheder, W. E. Plummer, F. Harsenlopp, Buffalo Sandstone
Brick Co., Buffalo, N. Y.
H. O. Duerr, Wawasset Stone Co., Wilmington, Del.
W. K. Squier, Paragon Plaster Co., Syracuse, N. Y.
H. B. Skeele, Savannah Brick Works, Savannah, Ga.
S. G. Marling, Silica Brick & Lime Co., Ltd., Victoria, B. C.
H. C. Shields, Lehigh Car Wheel & Axle Co., Catasauqua, Pa.
G. W. Mitman, C. K. Williams & Co., Easton, Pa.
W. D. Schultz, Schultz Bros., Brantford, Can.
Wm. Bookheim, Schenectady Sandstone Brick Co., Schenectady, N. Y.
Albert T. Leach, H. de Joannis, Brick, Chicago.
F. K. Irvine, E. M. Updike, Rock Products, Chicago.

SIXTH ANNUAL CONVENTION

American Association of Manufacturers of Sand-Lime Products.

Monday Morning, December 6, 1909.

The convention was called to order at 10 o'clock (after an hour spent in enrollment of members, examination of credentials, issuing of badges for the convention and payment of dues for the year 1910) by President Goho.

The President: I should like, during the convention, that all the members wears badges. The Executive Committee has inaugurated a little different scheme for the conduct of the meetings, of which you will hear further.

PRESIDENT'S ADDRESS.

GENTLEMEN: The manufacturers of sand-lime products have every reason to congratulate themselves upon the prosperous condition of the industry in which they are engaged. The product of our plants is better than ever before and there is a rapidly growing appreciation of the merits of the product on the part of architects and builders.

Intrinsic merit and good business management have been important factors in bringing success, but neither of these could have availed in the face of an unfavorable rating upon sand-lime brick, and it was this Association that made the fight against such unfavorable rating and won out.

When this Association was called together for the first time for mutual advice and encouragement, there was no clearly expressed purpose of forming a permanent body. From this fact have arisen some weaknesses that should be corrected at this time.

The Constitution and By-Laws should be carefully gone over, with a view to revision, and your president suggests that a committee be appointed for this purpose, asking them to report at the business meeting tomorrow morning.

The only expenses which the Association in the beginning expected were those incident to the conduct of the office of secretary and those arising from the publication of the annual report of proceedings, and financial provisions were made accordingly.

A little more than two years ago, unexpectedly, an unfavorable insurance rating was made upon sand-lime brick. Had that rating been permitted to stand, it would eventually have closed every sand-lime plant in this country and had a most disastrous reaction upon the plants in the Dominion of Canada.

This Association took up the matter with the National Board of Fire Underwriters. Meetings were had with their representatives, tests were suggested, and finally made in the laboratories of the Fire Under-

writers, by the Underwriters and your committee with Professor Woolson and Dr. Lazell as advisory. The result of the tests was a vindication of our products. Considering the magnitude of the interests involved, the cost of this work was trifling. None the less, it was far beyond the resources of this Association. Common honesty and good business sense dictated that these bills should be met as promptly as possible.

With the exception of bills owing members of the Association for expenses in attending the meetings with the representatives of the Board of Fire Underwriters, and the salary due the secretary, we are out of debt. In the meantime we have not been able to publish our report of proceedings, and this may have cost us some memberships. Your president suggests that a committee be appointed to report tomorrow morning upon our finances, the outstanding bills, and at the same time upon the ways and means, if such there be, for publishing the proceedings of the meetings at Columbus, Washington and Buffalo. It should be proper for this committee to take up and report upon any phase of these questions that may seem advisable. Should the report of these years be published separately or as a single volume? Should the reports be published verbatim or with repeated matter eliminated? When published, should their circulation be limited to the membership of this body? If publication in full be impracticable at this time, are we in a position to publish as bulletins, articles of technical value? This question of how far we should extend the benefits of this Association to those outside leads me to speak of certain changes that your Executive Committee has seen it wise to make at this meeting.

Registration consists as much in paying dues as in any other one feature. There has been trouble in the past because the Association never knew what it had to use in keeping house. With the fees collected before debts are incurred we know just what we dare spend to prevent a deficit. Those who are not members of this Association, as shown by the books of the treasurer are not privileged this floor. Those of you who are familiar with the trade associations in other lines know that their meetings are invariably in executive session.

This is not wholly nor even largely for financial reasons. It is right and proper that we should know exactly what we have to rely upon in our treasury. The only way to bring this about is to insist upon the payment of dues previous to admission to our meetings.

Beyond this, if you will look over the proceedings of the meetings held, in other years, you will find that a great deal of the time of this Association was taken up by persons who asked information of every sort, persons who took the floor repeatedly, but persons whose names do not figure in the books of the treasurer. An additional reason is to be found in the nature of our discussions. The perfect building material has not yet been found. At our sittings we have been very frank in talking about the difficulties we have met, weaknesses that have developed and how to remedy them, the cost of production and selling prices, and a variety of other things best discussed in executive session, that garbled and distorted versions of our statements may not be used to our disadvantage. Our meetings are valuable, and our time is valuable, the results of our experience are valuable, and those who want to share in the benefits of this body should be ready to step up and see the secretary and treasurer in an official way.

Your president suggests that a fifth member should be added to the Executive Committee, who shall represent our Canadian membership and do what he can to bring all of the sand-lime plants in the Dominion into affiliation with us.

The report of the Secretary was then called for and read as follows:

SECRETARY'S REPORT.

GENTLEMEN: It is with no little pleasure that your secretary has to report that the Association is in much better financial condition than it was at the time of the Washington meeting. The first half of the year from the standpoint of my office was almost entirely devoted to the work of getting in the money from the dues and the assessment levied at the last meeting and paying off the bills incurred by the tests that were conducted at the Underwriters Laboratories, now almost two years ago, and those attendant thereto.

In October, when the Special Bulletin was issued showing the result of the Joint Committee's work, a large number of the members responded, expressing their satisfaction with the same, and some few did not seem to understand how to apply the information practically. On this topic, there was a great deal of correspondence. On the whole I think the bulletin accomplished some good. This brings forward the suggestion that similar bulletins upon other topics of interest might be issued with profit and you will doubtless hear more on this topic as the meeting progresses.

The majority of our members are loyal but feel that the Association is not working directly for their benefit as individual manufacturers. Some have stated that they derive no benefit that they can see, as they do not attend the meetings, and demand that the proceedings be printed as formerly. Your secretary has written no less than fifty letters sketching the main points of the last two meetings for the benefit of such inquirers, and the members in question have almost to a man responded by remaining with us. While this is inexpensive to the Association, it has proven no little burden, and consumed a lot of time for a man already crowded to the guards with work. This is not complaining at all, but in explanation of the cause of my work not proving more efficient. I have simply done the best I could for the duties you have laid upon me, and only regret that I could not do more, or better that which has been done.

I have endeavored to conduct an Inquiry and Answer Bureau which some of the members seem to have found useful, but it requires so much work that I have not been able to do the idea justice. Still expressions of appreciation have come in, and it has been the means of keeping some of the dissatisfied members in line.

We have received into membership five new members. Thirteen of the members have withdrawn. Thirty-three members are in good standing up to the present meeting. There has not been a member lost that I could keep in the fold and under the circumstances of almost universal dissatisfaction at the beginning of the year I feel that we can congratulate ourselves that things are no worse.

The reports that come from the manufacturers in the last few months are very encouraging and it is evident that sand-lime brick men are generally increasingly prosperous. No doubt we can all stand for a little of that.

I have a few letters that may be interesting:

(The Secretary then read several letters of accounts outstanding with the members of the Joint Committee on Tests, also a letter from the Silicate Brick & Stone Works, Perth, Scotland, who complimented the Association on its good work and the progress of the industry in this country.)

Now looking into the coming year I see my book of engagements filling up so fast, that I feel unable to give the work that time and attention which I know it will require. I see where I could have done so much more in the past, and realize that lack of time must necessarily

curtail this, so I respectfully ask that the nominating committee will find a successor for me in the Secretary's office. I fully appreciate the high honor of serving you, and the confidence, support and assistance that so many have given, but in justice to the organization and the work that should be taken up by your secretary in the coming year, I ask to be relieved. I will always take a hearty interest in your meetings for the friendships formed in this Association are dear to me.

The report of the Treasurer was then called for and read as follows:

TREASURER'S REPORT.

Receipts.

Dec. 26	Balance account 1908.....	\$114 63
Dec. 26	Comp. B. Co., Indianapolis.....	10 00
Dec. 26	Norton Silica B. Co., Norton, Va.....	5 00
Dec. 26	Penbryn Brick Co., Bridgeton, N. J.....	20 00
Dec. 26	Rockaway B. Co., Dover, N. J.....	25 00
Jan. 12	Norton Silica Brick Co.....	25 00
Jan. 12	Hummelstown B. S. Co.....	25 00
Jan. 12	Savannah Brick Co.....	20 00
Jan. 12	Red Wing Brick Co.....	10 00
Jan. 12	Sand Lime Brick Co., Phila., Pa.....	10 00
Jan. 12	Silicate Brick Co., Ottawa, Ont.....	20 00
Jan. 12	Lehigh Car Wheel & Axle Wks.....	35 00
Jan. 12	E. T. Slider, New Albany, Ind.....	10 00
Jan. 21	King's Crown Plaster Co.....	25 00
Jan. 21	Saginaw S. B. Co.....	25 00
Jan. 21	Buffalo Sandstone Brick Co.....	25 00
Jan. 21	Am. Sandstone Brick Mchy. Co.....	25 00
Jan. 19	Cleveland Brick Mchy. Co.....	10 00
Jan. 19	American Clay Mchy. Co.....	25 00
Jan. 19	International S. L. B. Mchy.....	25 00
Jan. 25	Wichita S. B. Co.....	25 00
Jan. 25	Henry Disston Sons.....	25 00
Feb. 2	Sebewaing S. B. Co.....	25 00
Feb. 2	Manitoba Pressed Brick Co.....	25 00
Feb. 2	U. S. Brick Corporation.....	10 00
Feb. 2	C. K. Williams Co.....	10 00
Feb. 2	Schultz Bros. Co., Ltd.....	25 00
Feb. 19	Belt Line Brick Co.....	25 00
Mch. 8	Paragon Plaster Co.....	25 00
Mch. 8	Winchester G. B. Co.....	25 00
Mch. 13	Savannah B. Co.....	15 00
Apr. 2	Savannah B. Co.....	2 50
Apr. 17	Schultz Bros. Co., Ltd.....	10 00
May 18	C. K. Williams Co.....	10 00
May 21	Fremont G. Brick Co.....	10 00
July 18	Silica Brick Co.....	25 00
July 27	Dyett Sand-Lime Brick Co.....	15 00
July 27	Penbryn Brick Co.....	15 00
July 28	Queens Wng. Co.....	5 00
Aug. 25	Sibley Brick Co.....	25 00
Aug. 30	Rochester Comp. Brick Co.....	25 00
Oct. 11	Bond Sandstone Brick Co.....	25 00
Oct. 13	Berg Machinery Co.....	15 00
Oct. 30	Berg Machinery Co.....	10 00
Oct. 30	Crume Brick Co.....	15 00

Nov. 6	D. L. James	4 00
Nov. 6	Silicate B. & S. Works, Perth, Scotland, net \$9.74.....	10 00
Nov. 16	Flint S. B. Co.....	25 00
Nov. 18	Grande S. B. Co.....	20 00
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		\$991 13

Disbursements.

Jan. 12	F. K. Irvine, Sec'y.....	\$50 00
Jan. 25	E. W. Lazell	78 75
Jan. 25	I. W. Woolson	100 00
Jan. 25	Frances Pub. Co.	110 44
Mch. 8	Underwriters Laboratories	196 31
Mch. 8	C. W. Chandler.....	14 50
May 18	Franklin Printing Co.....	30 03
Aug. 18	Underwriters Laboratories	200 00
Dec. 6, 1909.	Balance on hand	211 10
		<hr/>
		\$991 13

The President: These reports are now before you for your consideration. In the first place I will appoint a committee to audit the accounts of the Secretary and Treasurer. I will appoint on this committee Mr. Penfield, chairman, Mr. Godart and Mr. Ericson. What is your pleasure with regard to the reports?

Mr. Jackson: I move that a Committee on Constitution and By-laws be appointed. Seconded by Mr. Duerr, and carried.

Mr. Squier: Mr. President, you wanted some disposition made of the Secretary and Treasurer's reports. I move that these reports be referred to a committee on auditing. Motion seconded and carried.

Mr. Jackson: Mr. President, I believe you also recommended in your report that a committee be appointed on Ways and Means. I move that such a committee be appointed. Motion seconded by Mr. Skeelee and carried.

The President: We would further recommend in regard to the enlargement of the Executive Committee that this be done by a committee on Constitution and By-laws without any further discussion. I think it would be a wise thing to have a representative from the Dominion of Canada among the officers of the Association. They have a great number of successful plants interested in our work and we are interested in them. Certainly some resident could keep in closer touch with them than we could from this side. If it is the sense of the Association that we have a member from Canada on the Executive Committee, it would be better to provide for it now so that the election will be made tomorrow and that party will be able to leave here knowing that he is a member and not be notified by correspondence, which is always very unsatisfactory.

The motion of Mr. Duerr is that the office of Vice-President be created and that a member of the Executive Committee be from Canada, the Vice-President to be appointed from Canada as it is the pleasure of the Association. This motion was seconded and on being put to vote, carried.

The President: Instead of leaving the business session at the end, I have put the business session for the morning of tomorrow. This gives time to discuss all business of the Association in a careful, methodical way and gives the committees a good chance to get together this evening or during the day sometime to formulate their plans.

APPOINTMENT OF COMMITTEES.

Finance or Ways and Means: Messrs. Squier, Jackson and Berg.

Constitution and By-laws: Messrs. Skeele, Bacon and Irvine.

Committee on Resolutions: Messrs. Crume, Palmer and Carmichael.

Committee on Nominations: Messrs. Duerr, Strong and Carmichael.

The President: I want to suggest that there are two items of unfinished business left over at the last meeting. The final report of the Committee on Tests has been made, but never formally to the Association. Also an amendment was offered at the Washington meeting raising the dues to \$25.00. There seems to be, and probably with good reason, some feeling that that amount is larger than need be. I would like to have the members give this some thought. The amendment was offered last year and referred back for a year, according to what the Constitution was thought to have provided. It isn't there, however, and could have been acted upon at the Washington meeting. This finishes the introductory work of this session.

The program is not crowded and the object the committee had in mind in not doing this was to enable the members to have plenty of time for free personal contact with one another. There is a great deal of good to be derived from this meeting if the members sit down and talk over this, that and other things and discuss in direct personal conversation the various phases of the business. We have made the program short for this purpose.

Mr. Duerr: I would like to make a suggestion. We have had, I think this is the sixth annual meeting, and all of our meetings have been pretty much full of business, and we have never had anything in the way of a social entertainment or feed and I would like to suggest that we get up some kind of a dinner or smoker or something of that kind this evening where we could all be together and have a real good social time. I really believe something of that kind would be a good thing, and if some of the members object to the evening being taken up we can have it in place of the regular dinner hour.

Mr. Jackson: Did Mr. Duerr make that as a motion or as a suggestion?

Mr. Duerr: I will make it as a motion.

Mr. Jackson: I support Mr. Duerr's motion and would like to see it referred to a committee to see what arrangements can be made with the management of this hotel, to see what they will serve, something at the rate of \$1.00 a plate possibly, and to be served in this room at 6 o'clock p. m. I think we would bring out matters probably that wouldn't come up in our business sessions.

Mr. Squier: I second the two motions.

The motions were seconded and on being put to vote carried. The following committee to arrange for the dinner were appointed: Messrs. Duerr, Allen G. Walton and Plummer.

Mr. Duerr: If the chairman of this committee has got to go around and canvass the convention, he would suggest that they all stand up who will attend such a dinner. A canvass was made and twenty-six names secured.

Mr. Irvine: We have as one number on the program a Question Box. I wish that you would hand those in previous to the last item on the program for tomorrow afternoon's session. If there is no envelope on my desk marked Question Box, it will mean that there is nobody here who wants any question answered. I do not want it imperfectly done so that you won't get your answer. If you write the question I will keep it here and write the answer on it as brought out in the discussion.

Mr. Plummer: Several of the gentlemen have asked me if they could come out to our plant. The time all seems to be occupied by the program. However, if any of the gentlemen want to go out it will take about three and one-half hours to go to the plant and back. If this is done tomorrow afternoon it will cut out part of the session. Two or three have said that they would stay over until Wednesday, but I would like to know how many want to go and if enough care to go we will ask the Association to make arrangements. We would have to go out on the trolley and then walk two miles. If you have it in mind, you are cordially invited to come.

The President: That is a question the members can take up with you.

Mr. Duerr: As we have plenty of time before luncheon, would suggest that we have a paper.

WHAT THIS ASSOCIATION HAS ACCOMPLISHED FOR THE TANGIBLE USE OF ITS MEMBERS.

BY JOHN L. JACKSON.

Gentlemen: I will divide my article into three subjects; the first will be, "Why this Association was organized;" the second, "What have its members done;" and third, "What has the Association done as a whole."

Before our Association was organized, some of its members belonged to the N. B. M. A., attended their conventions and probably remember why we organized this Association. It was not done hastily, but after a great deal of consideration on our own part as we believed this was an age of combinations and associations, and in order to get the recognition to which our industry was entitled, we should have to have an association of our own to keep abreast of the times. We not only had to find a market for our product in competition with an old established and tried out product, (clay brick) but also concrete which was coming to the front with rapid strides. Both of these industries had associations of their own composed of keen progressive business men who were not going to let a new industry come from a foreign country and take away their trade without making a fight, and it has been a hard and continuous one as most of us found. We also had to learn how to handle

the different materials and machinery, as the industry was new and we manufacturers were in the midst of an undeveloped period, groping after facts and information, which we were anxious to secure at any cost. We also found that sand lime brick were not as easy to make as we expected and were led to believe by the different manufacturers of machinery and promoters. By comparing our troubles and looking over successfully operating plants under similar conditions, most of the manufacturers worked out of their troubles and the machinery manufacturers learned that this industry was no different from many others, that it was a material and mechanical proposition which, under successful management, could be made a profitable one, and not a secret as was exploited in the beginning. Our industry was practically unknown in America until 1901, when there were two factories in the States. In 1903 there were sixteen in the United States. A year later about thirty of the manufacturers of our industry in the United States and Canada, through the efforts of Mr. H. de Joannis, organized our Association in Cincinnati, Ohio, in December, 1904. Through the moral and financial support of about half the manufacturers of our product and the hard work of about a score of the members, this Association has been kept alive. It has been hard work on the part of those who were willing to do it, and about all they received for the time and money devoted for the interest of all members, have been comments and criticisms; mostly from manufacturers of this industry who have been receiving and are now waiting for information and benefits without being willing to pay their share of the expense, and others who have paid, but have not given us any assistance; a great many have never attended any of the meetings of the Association; and others have failed to answer letters from your secretary and other members who have tried to help along the Association. A few who did answer found fault with the work that had been done. Among some of the letters I received I will refer to one, part of which reads as follows: "I fail to see wherein we, as manufacturers, have received satisfactory returns for the money paid to the Association in the past, and the climax was capped by the report of the Government Bulletin No. 370, in which the Laboratory tests of the Chicago Underwriters are fully given. Now the writer did not attend the convention at Columbus or Washington, but his understanding is that a committee was appointed, and said committee was supposed to work in harmony with the Underwriters. If this is the case and if the committee had anything to say or do regarding the kind of brick that were tested, they surely neglected their duty, etc." I hope you will pardon me for drifting from my subject, but as a member of this Committee, I distinctly remember asking your secretary to write to all the members of the Association, asking them if they were willing to submit their brick for the test, or if they would suggest brick that they thought would come up to the requirements. In most all cases these letters were not answered and your Committee did the best it could under the conditions.

In looking over the government bulletin No. 370, I find it was the result of tests on various building materials made by the U. S. Geological Survey, with a furnace in the Underwriters Laboratories, Chicago, Ill., to determine the effect of fire and subsequent quenching with water, on mortar building blocks made of river and slag sands, common, hydraulic pressed and sand lime brick; gravel, cinder, limestone and granite concrete; glazed building and partition terra cotta tile; and lime stone, sandstone, granite and marble building stone; with the object of determining the fire resistance properties and rates of heat, conductivity of various building materials; and has nothing to do with the tests made by your Association. You, as members, probably remember about two years ago, through the efforts of our competitors, there was a ban put on our

products, and in order to protect the interests of all manufacturers, your Association through a committee appointed for the purpose, had a test made of its product with other building material. It took almost two years of hard and continuous labor on the part of the committee in connection with the committee from the Underwriters Laboratories. The committee had to visit Chicago and New York City a number of times to meet the representatives of the Underwriters in order to get such rulings as your industry was entitled to, and we now have tentative test specifications for building materials in the form of brick, which are in the hands of your secretary for distribution to members (in good standing) of our Association. These specifications probably will not suit all the manufacturers of building material, but they are the best your committee could get at that time, and I as a member of the committee, feel that your Association has accomplished a great deal in getting the ban removed from our product. I do not believe that we will have any more trouble unless it is that we may be asked to have our brick tested as individuals to show that they come up to the requirements. By having our annual meetings it has brought us in contact with such people as Professors Woolson and Lazell, Peppel, and many others from whom we have, as an association, derived great benefit. If, as individuals, we did not benefit by the knowledge or information they have given us, we are to blame and not the Association. As an association, we have helped a great many individual manufacturers work out their troubles. We have also helped them in marketing their product, which they could not have done alone. The Association has saved the industry, as we could not have done anything with the Underwriters Laboratories and no one individual could have borne the expense, which did not fall very heavily upon us by dividing same among such of the manufacturers as were willing to pay their share. It has always been the means of bettering or improving our product. I feel that there is a much better building material made and offered and a much higher demand than a few years ago or when the industry was new. In the report of the Geological Survey, which has just come out, they state that the value of the product in 1903 was \$155,000.00; in 1907 it has increased to over \$1,225,000.00 and ninety-four plants in the United States. The outlook for my state is much better than it has been for years; one contractor alone using over twelve million brick on two jobs this year. The Sebewaing Sandstone Brick Company has increased its output 50 per cent; the Flint Sandstone Brick Company and the Saginaw Sandstone Brick Company have doubled their capacities during the year; the Sibley Brick Company is now installing additional equipment and expects to double their output before the end of the year; the Michigan Pressed Brick Company at Detroit, changed over their plant late last year and has had a successful season; the Grande Brick Company of Grand Rapids, Mich., started their factory last May and have been making over 20,000 brick per day, and intend to start day and night run on the 8th inst. and make over 40,000 brick per day. All the above factories are behind on orders and most of them intend to run a good share of the winter. All this prosperity has been helped along by the support of our Association. A great many of the architects are now specifying sand-lime brick or a hard burned clay brick; others specify sand-lime brick only; which did not come easy, but was accomplished by the persistent work of this Association, and I feel that if it had not been for us, we would not have a sand-lime brick plant doing business today, nor would we have such buildings made from sand-lime brick as the Buick Motor Co.'s, at Flint, Mich., which contains in the neighborhood of fifteen million; Morgan & Wright Rubber Co.'s, at Detroit, containing over six million; the Tuller Hotel, at Detroit, a thirteen story building, etc.

I hope that the members of our Association will find that they have derived benefit from our meetings and that they will try to induce other manufacturers to join with us and attend our next annual meeting in order to make it as interesting as we can to all manufacturers in this line.

Mr. Skeele: I want to ask if these tentative bulletins are ready for use or not.

Mr. Jackson: They are ready. We want, that is your Executive Committee, that members in good standing only should get these, because they paid for them.

I would like to ask how many of the members have sent for that Bulletin No. 370, and how many have looked it over. I have one of those copies with me in my room. I have had at least a dozen letters in the last three months referring to that bulletin. Now, in looking that over hastily from that report, it doesn't talk very encouraging regarding sand-lime brick, but in looking it over carefully one will see that there were only three samples of clay brick tested, one sample of sand-lime brick and terra cotta and concrete under different forms, and I see from the brick that were tested, the sand-lime brick, before they were tested, weren't very good quality; I do not know where they came from, but our sand-lime brick stood up just as well as the other brick when you compare with quality. They used a high priced face brick and some that had been used in St. Louis in testing apparatus and our brick, considering that they weren't first class brick, stood it about as well as any brick tested.

Mr. Duerr: I would like to ask Mr. Jackson whether Bulletin No. 370 was the one issued in which they made the tests at Chicago. I do not recall it under that number. I studied that bulletin very carefully and it confirmed my opinions which were formed at Chicago of the clay brick that were tested by the Underwriters at Chicago, under our supervision. The St. Louis brick showed to be far superior to any other brick that were tested, and we tested brick from the New York district, Philadelphia district and Chicago and St. Louis districts. The St. Louis face brick showed scarcely any damages until the water was applied, when some of them cracked and exploded, but very few compared with the others. The same thing applied to the common brick. They were unusually good. However, the common brick showed a great many more cracks. In this Bulletin No. 370 a brick was tested which was not a representative sand-lime brick of today, or even of two years ago when these tests were made.

Mr. Jackson: They referred to that in that bulletin.

Mr. Duerr: I remember that. These tests were made in 1907, two years ago, and we all feel and are satisfied that we are making much better brick today than two years ago. If you would go over the bulletin, and I think it worth while for every member to get a copy, and you can do so by writing to the Geological Survey, you will find that the tests there by comparison, and comparing the results with the results made on sand-lime brick at Chicago by our Association and the Underwriters' Laboratories you will find the sand-lime brick compare most favorably to

any other material. In fact, outside of the St. Louis brick, I think our brick showed up infinitely better than all the rest. When it comes to other materials, such as stone and concrete, which this bulletin treats on, they are absolutely not in it with the sand-lime brick. Now, damage by fire and water to the sand-lime brick in the majority of cases is simply a softening up of the surface and washing it away to a depth of an eighth or a quarter of an inch in some cases and a little more, in some cases softening them up to perhaps a depth of three-quarters of an inch, but we found when those brick were left in the wall afterwards, standing for some months, that those faces hardened up very materially. Now, the point the Underwriters made with us was, how much salvage can they get from the material after the fire and what has to be done to take care of those walls. Well, I think we demonstrated to them beyond any question of doubt that the brick left in the wall was just as good after the fire as before. As to the appearance, that could be remedied by putting on a coating of stucco or mortar, as is frequently done, and have just as good a wall as before. The question came up as to whether stucco or plaster would adhere to the wall, and while we had no opportunity to make a practical demonstration to them that it would, at the same time I think we convinced them that that was the case.

Mr. Jackson: Right in connection with that, Mr. Chairman, I would like to call your attention to the little circular that the Belt Line Brick Company, at Minneapolis, got out for their own protection. The clay brick manufacturers have an association, a very strong association, a local organization, and they had a test made of sand-lime brick. I will read a copy of that test gotten out early this year.

(Clay Brick Circular.)

NORTHWESTERN CLAY ASSOCIATION.

Office of the Secretary.

REPORT ON SAND-LIME BRICK.

BRICKTON, MINN., Mar. 10, 1909.

Northwestern Clay Association: Your committee appointed to investigate the merits of sand-lime brick beg to state that after making numerous tests and extensive investigations as to results in this and other countries, and having fire, water and acid tests made in the State University, they would report their conclusions as follows:

Sand-lime brick heated to a temperature anywhere above the initial burning temperature of the lime from which it was made will become friable and disintegrate with any friction or wear. This temperature was found to be from 1,000 to 1,700 degrees Fahr. in the samples tested. A clay brick only reaches its best under double this heat.

A sand-lime brick heated to about 1,200 degrees Fahr. and then wet can only be gathered up in fragments. Sand-lime brick simply soaked in water will depreciate about one-third in crushing strength while wet.

Sand-lime brick in contact with acid resembling sewer gas, as nearly as could be produced artificially, became very friable, and could easily be rubbed away with the finger.

Sand-lime brick in no case is better than sandstone and is subject to all objections of the same. It absorbs dust, smoke and grime; does not adhere to mortar well and is a good conductor for heat, frost, and dampness; can not be produced, when properly made, as cheaply as the clay products and is hard to make of a uniform quality, as is also true of the cement products. It has proven to be a short lived industry wherever tried.

Yours respectfully,

J. W. L. CORNING,
HAROLD JOHNSON,
IRA C. JONES.

Now, the Belt Line Brick Company found that this circular was pretty well distributed among the architects, contractors and builders and of course in order to protect their interests they had to have their brick tested and they have on this same sheet, which is a sheet that every member ought to take home, the result of the test made which they claim is unbiased and as near right as could be done.

COLLEGE OF ENGINEERING.

UNIVERSITY OF MINNESOTA, MINNEAPOLIS.

William H. Kavanaugh,

Professor of Experimental Engineering.

MAY 4TH, 1909.

BELT LINE BRICK COMPANY,
512 Andrus Bldg., City.

Gentlemen: The following is a summary of the comparative tests I have made of common clay brick and your sand-lime brick.

The bricks tested were selected by myself; the sand-lime from the stock piles at your plant and the clay from the stock pile of a well known Minneapolis firm.

ABSORPTION TESTS.

	Sand-Lime.	Clay.	
Average percentage of absorption by weight, per cent.....	End Cut.	Side Cut.	
	15.86	25.18	29.19

CRUSHING TESTS.

	Sand-Lime.	Clay.	
Average crushing strength, pounds per square inch	End Cut.	Side Cut.	
	3,153	2,607	1,545

TRANSVERSE TESTS.

	Sand-Lime.	Clay.	
Average modulus of rupture, pounds per square inch	End Cut.	Side Cut.	
	344	400	299

FREEZING AND THAWING TESTS.

	Sand-Lime.	Clay.	
Average percentage of weight lost.....	End Cut.	Side Cut.	
	0.402	1.780	1.813

FIRE TESTS.

All the clay bricks were cracked in the furnace by the high temperature; the sand-lime bricks did not crack in the furnace, but cracked on being removed therefrom. The sand-lime brick stood the test fully as well as the clay brick.

Respectfully submitted,
(Signed) Wm. H. KAVANAUGH.

Now, in connection with that they built a small structure, a small house five feet square and five feet deep, laid up with mortar and let the mortar set thoroughly. Then they put in a hot fire and poured water on it. That wall is up there open for inspection, and any man who gets anywhere near Minneapolis ought to go out and see that wall and he will satisfy himself that sand-lime brick if properly made will stand anything that a good clay brick will. Of course we do not want to take this into consideration with face brick or vitrified brick, but such brick as we get in competition.

Mr. Ericson: Along this connection it may be of interest to the Association to hear that several of the large iron and steel companies of the East have recently made very extensive comparative tests of sand-lime brick with the regular run of red clay brick. These were made in furnaces with gas. I was personally present at most of the tests and the results were very satisfactory.

Mr. Skeele: While on the subject it might be interesting to state that I took samples of the hardest clay brick in the Savannah market to a hydraulic machine and these brick cracked in the machine at various pressures ranging from ten to twenty tons, and a very high class shale pressed brick from the North stood as high as thirty tons, and I will confess I was very much surprised my brick stood over eighty tons, showing the difference between sand-lime brick and common clay brick. I really wasn't prepared for such amount of difference and those figures were confirmed subsequently by testing by Prof. Woolson, of New York City. So you needn't have any fears for the crushing strength of sand-lime brick when properly made.

Mr. Squier: The thought occurred to me while Mr. Jackson was reading that the question has been asked by members of the Association and people outside because it is known we furnish quite a good deal of brick for sewers, man-holes, etc., whether the brick are good for these purposes. Unfortunately our engineers are loath to put themselves on record. They say they work all right and we specify them, but we feel a little chary about going on record because we do not know what is going to take place in a little while. The Bell Telephone Company put them in their man-holes in 1907, and have continued to put them in ever since. Not one has gone wrong.

Mr. Jackson: On that question of Mr. Squier's regarding the use of sand-lime brick in sewers, we have furnished a great many brick used under ground in conduit work and telephone work; we used upward of a million last year and two years ago and not one to my knowledge was

imperfect. The brick turned out for this work have, however, got to be very carefully made and care used in the selection of material.

Mr. Duerr: The committee that was appointed for the purpose of taking up the matter with the Underwriters is prepared to make a verbal report, if that will answer the purpose, on what was done and then ask to be discharged.

Some time ago your Secretary sent out a special bulletin which practically covers the situation. I will read the first page of that:

We are pleased to furnish herewith to each of our members copy of these specifications as far as they have been worked out in conference with representatives of fire underwriting interests up to the present time. They are incomplete in a few details, many of which we would class as non-essential.

In their present form they are sufficient for examination and test work on brick, and Underwriters Laboratories (under the direction of the National Board of Fire Underwriters) has agreed to use these as a working basis under which it will recommend for approval the product of such factories as apply for examination and test under rules.

Your committee found that there was a great deal of "back filling" and temporizing as far as the Underwriters were concerned but they finally agreed upon the adoption of specifications which would apply to all brick whether sand-lime, cement or clay and that where there was any doubt expressed as to the brick being satisfactory that could be immediately taken care of by that manufacturer having his brick tested and if they came up under the specifications adopted, the Underwriters would have to accept them as a first class brick.

Your committee does not feel that these specifications are yet in form for general distribution to outside interests, for the reasons stated above, and also because of the fact that they have been worked out largely through the efforts of our representatives. We trust members will appreciate the fact that the Committee has carried forward the work as far as it is possible at the present time, and has cleared the way for the approval by the representatives of the Underwriters of any product made by any manufacturer which is found to meet the specifications enclosed herewith.

H. O. DUERR, Chairman,
ADOLPH VAN SPANJE,
JOHN L. JACKSON.

I think the feeling of the individual members of the committee is that the matter is practically a closed issue. In other words, we won't hear anything more about it. While the Underwriters tried to make it a point that each and every plant that is putting brick on the market should have its brick examined, etc., and tested before this brick would be accepted, I do not think this will ever come up. It is possible in some cases where they feel that really poor brick is made, that the member in order to have his brick accepted will have to have tests made, which I think is no more than right.

I might say that in connection with the tests that were made to use this specification, the sand-lime brick showed up a greater uniformity in the test throughout than any of the clay bricks, which refutes the statement made in this bulletin which Mr. Jackson read a few minutes

ago, where the clay brick man claimed we could not make uniformly good brick.

If it is your pleasure, Mr. President, we would like to have this committee dissolved. I would also like to say in connection with this that last year, or rather this year, at the meeting of the American Society for Testing Materials, the Committee on Specifications for Building Materials, of which I am a member, adopted a specification to be a national specification for building materials in the shape of brick. This adoption is not final, as under the ruling of the Association it has to stand over a year to be voted upon. If at the end of the year it receives the majority of votes in favor of its adoption, it becomes a national specification of this Association, which is recognized throughout the country, and which then will be adopted by any body that wants specifications for brick or materials in the shape of brick. That places us in a very good position and I might say that the specification as adopted is practically our specification. There are a few slight modifications.

I will say that where modifications were made it was made not in the interests of sand-lime brick, but lowered and modified for clay brick. These specifications will help us in one particular, and that is with the government, as the government has three representatives on this committee, and any specifications adopted by this Association, that is, the American Society for Testing Materials, are uniformly adopted by the government. Now, I do not know what has been your individual experience, but I have found that a great many have had trouble getting the government to use sand-lime brick. When this specification is once adopted and you will be able to pass this specification, you won't have any trouble to get your material recognized. In fact, you can then force recognition, and acceptance of your material in the government's buildings.

Mr. Skeele: I would like to ask Mr. Duerr a question on this subject. I understand now any sand-lime brick manufacturer is liable to be called upon to submit a test to whoever may object to using the material.

Mr. Duerr: To illustrate the case as I understand it is this: Assume that you have made a contract with some one to furnish his building with brick of your make and he comes along to you afterwards and says, "Why I can not use your brick, because the Underwriters tell me if I use that brick I will have to take a different rating on my insurance." Well, then, if you can not convince the Underwriters of that particular district that your brick are all right by moral or other persuasion, you can force him to accept it by saying, "Here are your specifications and here are my brick, test them and I will stand on that test." If your brick come up under that test he is compelled to give the same rating as the best clay brick.

Mr. Skeele: The same principle applies to all brick, clay brick, cement brick, etc., and if on the other hand we find competition with very inferior brick I suppose we can force them to the same test.

Mr. Duerr: Either that or you could get the owner to call for such a test.

The President: What is the pleasure of this convention with this report?

Mr. Bacon: I move that the report be accepted, filed and the committee discharged with the sincere thanks of this Association for the very careful work they have done in this matter. This motion was seconded and carried.

Mr. Jackson: I would like to suggest as new members the Toronto Indestructible Brick Co., Ltd., of Toronto. Their president and superintendent are here and want to join the Association. I will vouch for them.

As there was no objection, these parties were accepted as members of the Association.

The convention then adjourned to meet again at 1 o'clock.

Monday Afternoon, December 6, 1909.

The President: There is one committee left to be appointed. The chair appoints as Nominating Committee Messrs. Duerr, Strong and Carmichael. The committee will have a report ready to present tomorrow morning at the business session.

The first paper on the program, "What the Association May Do for the Industry It Represents," by J. S. Palmer. We will have Mr. Palmer's paper at this time.

Mr. Palmer: When I was in Chicago about a month ago I was talking with Mr. Irvine and he wanted to know if I wouldn't favor him with a talk on this subject. I told him he had better get somebody else that had had more experience along this line than I had. However, he insisted and I have prepared a little paper on the subject.

WHAT THE ASSOCIATION MAY DO FOR THE INDUSTRY IT REPRESENTS.

BY J. S. PALMER.

The primary object of association is to bring together into alliance those having mutual interests in such a way as will further such interests through co-operation. To get the best of the association idea there must exist a fraternal spirit of brotherhood and neighborliness. The lesson of the good Samaritan will illustrate the meaning inferred. Shakespeare aptly expressed the thought in these lines:

"We few, we happy few, we band of brothers;
For he today that sheds his blood with me,
Shall be my brother."

It means a feeling of fellowship, and if need be, a willingness to sacrifice. This, perhaps, is idealism, but it is well to keep the ideal in view. There should be more of the sentiment of brotherhood, and less of rivalry. Because another fellow being is engaged in the same class of business is no reason why he should be treated almost as one's enemy, rather to the contrary there is every reason why he should be one's friend and neighbor. Their interests are mutual and both have the same problems to work and solve, which might, and undoubtedly would be, furthered through co-operation.

The association is for mutual aid. There are problems difficult for the individual that are simple through associated effort. Mutual effort will upbuild where antagonism will retard or tear down. We may be assisting our co-laborer today who will be rendering us a greater help tomorrow.

An organization for mutual benefit means the union of all in an effort to promote the general welfare. A spirit of contention is foreign to the idea and should not be tolerated.

Honest competition is healthy and will tend to strengthen and upbuild, but if the association idea means anything at all, it is, that your competitor is not your rival, but is your neighbor and deserves neighborly

treatment. If we meet together wearing "sheep's clothing," to get the other fellows' confidence then depart and use the knowledge thus gained to his injury, then we are hypocrites indeed and merit the contempt of our associates.

There are two meritorious objects for an association of manufacturers; to standardize its product, and to advertise its product.

To have a standard as close to the ideal as possible will tend to a uniform product and to minimize fluctuation in price, protecting the honest manufacturer as well as the consumer, and assuring the one a fair margin of profit, and to the other a dependable article. A commodity that has a standard quality fixed by competent authority recognized as such by the consumer, need not fear discrimination.

With the first object gained, the second, publicity, need not be feared. Sand-lime brick, as now made, is a new product in this country, and it needs to be brought to the attention of the public in such a way as will best prove its worth. Journals devoted to the building material industry, the architect, the contractor, and the home should be used to keep the product to the fore. Photographs of some of the prominent buildings, both private and public where the brick have been used, together with a well written article relative thereto, might be published to advantage of the industry through a publicity committee. This committee might issue an illustrated pamphlet annually with pertinent facts relative to the product of interest to the prospective builder, which could be distributed to advantage by the different members of the association. Such pamphlet should cover the field generally and not confine its illustrations to any particular locality. Each member, if he so desired, should be able to have a photograph or two of buildings in his own locality published in the pamphlet. It might contain to advantage certain useful hints for the builder; such as a rule to figure the number of brick, quantity of lime, cement and sand required for a certain size building, a suitable mortar mixture best suited for sand-lime brick; how to color mortar and proportion of coloring to be used, and any other information the committee might think would be of interest and useful to the prospective builder.

The pamphlet should be individualized as much as may be possible and not destroy its adaptability for general distribution by the various members, and to this end it would be well not to include a list of members, other than the name of the manufacturer for whom the books are furnished.

Such pamphlets could be sold to the members at cost.

The President: Gentlemen, the paper is before you for discussion.

Mr. Duerr: Mr. Palmer has been a member of this Association ever since its inception and has gotten up on the floor at numerous times and has made some most excellent suggestions, and I think we ought to take him at his word, therefore I move that we have a Publicity Committee, and that Mr. Palmer be made chairman of that committee. Seconded and carried.

Mr. Holden: I especially favor that feature where he suggests that our Publicity Committee get sand-lime brick mentioned broadcast before the public through some trade journals who at the present time do not represent us; the architect, contractor and builder and possibly the brick papers. There are now only two or three friendly publications that give sand-lime brick any space whatever. I think we want a Publicity Committee to see if they can get recognition in trade journals reaching the architects. I think we all know how difficult it is to reach the archi-

pects, and yet these architects do look over their own special trade journals. It seems to me a great deal of work can be done there.

Mr. Plummer: It has occurred to Mr. Irvine and myself, I do not want all the glory because it is not due me, that in the matter of publicity there came to our minds a suggestion that if we could have something to constantly drip on the architects and builders it might soak in. Our plan or suggestion is that we as an association adopt the picture postal card system. Our first idea was to run it with a group of ten selected fellows who would furnish the sinews of war, each furnishing five photographs, making fifty, one for every week. The manufacturer to provide himself with a list of people, whom he wants to reach, architects, contractors, and other people. Say he provides himself with a list of one hundred names. On Tuesday or Wednesday or some day of each week to have this list of picture postal cards gotten up in such shape as to be attractive and mailed to these addresses. Have this a regular weekly attack. A man can not pick up a picture postal and fail to look at the picture. Now, if you have these pictures going to a man's office every week, at first he may not pay attention, but if you say the same thing over and over again to them they will begin to take notice. Now we have a plan by which this postal card system can be put out without great expense, and by which the Association would derive benefit owing to its manipulating the whole thing. If the Association is sufficiently interested in this, I think Mr. Irvine can give you some facts and figures. You will not only be showing your own pictures, but will be showing pictures from points all over the country. The architect says, "I don't know about sand-lime brick," but with one of these postal cards every week he will begin to waken to the fact that there is something doing in the sand-lime brick industry outside his native town. Of course, he may want to see our brick. Show him as much as he wants, but I thoroughly believe that this Association is a valuable adjunct to the business and I would have these cards bear the imprint of the National Association, stating that the company who presents the card is a member of the Association, which is a power, and is making a standard brick.

Mr. Crume: I like the idea very well of having the postal card instead of a pamphlet. We have only been operating for a few months and I had a case of a big paper mill. They liked our brick but decided on red brick, but after a while they decided that they liked our brick better. Of course we had nothing except brick. We had some samples along, but we got out a little blotter. I had some cuts on these, some I borrowed from Mr. Jackson, one of them the Morgan & Wright Building. The builder said, "I knew that water washes up against it and if they stand up there they would stand up any place." So he said, "I will telegraph them and ask them about it." He telegraphed them and we got the order about two days after. If I had not had that picture I would not have had any chance. Then another thing occurred to me. Some one spoke of the Bell Telephone Company using sand-lime brick for man-holes. If I had known that the Bell Company had used them in Syracuse

it would have been no trouble at all to get Dayton. I think a committee ought also to be more or less of a bureau of information, so that we can get these points.

Mr. Squier: I do not get the idea that Mr. Plummer wants to keep this among a dozen parties, but I take it that the line of his thought was that if there was sufficient number of people willing to stand the expense that they would be warranted in making an issue of these cards. All details could be safely left with Mr. Plummer. This has been suggested by Mr. Plummer before and dropped. I know at that period I thought it not wise to drop it, but no one seemed to be willing to go ahead with it. I think Mr. Plummer should select his own assistants on his committee to devise how much they can do and prepare some outline of what they are going to do. All these ideas being brought out are valuable to Mr. Plummer and his committee.

Mr. Loewenthal: I think the postal card system a good one to leave to the committee to print or publish a certain number of cards as may seem advisable after conference with members of Association. Another point is that the individual member can easier distribute these postal cards and to points where they will do the most good, than for the Association to do so.

Mr. Plummer: That was my thought, and not to make it obligatory for a member to go in if he did not want to. Each member to signify his desire to have the cards and to contribute. I think it would be best to print an extra edition of a few particularly good ones. The larger the number of cuts we could produce the lower the cost. My only thought in bringing it out as an Association against a little club of Association members was that as we figured the thing out the cost for printing would be so small we could well afford to make a price to members which would leave a margin for the handling of this thing by the Association. If the Association did not care to do it, and if a sufficient number of the members cared to enter in and provide, of course the matter could stand that way. My thought was to have it come forth as official, that is, members having these cards should be connected with the Association. We wanted to advertise the Association and bring in the fact of our being members of the National Association.

Mr. Duerr: The experience which the Association has had in the past I think would clearly demonstrate the desirability of some such arrangement as we are talking about. There is no question but that the discussion we are having here is very valuable, at the same time we would have to leave the details to a committee. I do not see any reason in the world why this postal card scheme, or whatever it is as long as the Association is back of it, is not of infinitely more value than anything.

The motion was to the effect that a committee such as Mr. Palmer in his paper suggested, that a committee to be a Committee on Publicity work out its own details as to carrying it out financially.

The President: The motion then does not involve any expenditure of money from the fund of the Association.

Mr. Duerr: Excepting as they are provided for that purpose by subscription. In other words, one man may want two hundred postal cards per week, but another may only want fifty, and so on down the line. In each case each member would pay his proportionate amount for the amount that he contracts for. I do not see that you could do it very well any other way. There are members who might want a great many, but unquestionably there are others who might not want many.

Mr. Irvine: In this postal card scheme, a form is made up 28 x 44 inches in size or 22 x 28 inches, as the case may be. It is better to put thirty-two postal cards on the press at one time, and then run them on a fast press, which would bring the price down to a minimum when the order runs into millions. I recall the first million was quoted at about five or six cents a hundred and the second about four cents a hundred, which is rock bottom. For printing the halftones would have to be trimmed uniformly or vignetted, as the case may be, which is a trivial expense when you order thirty-two of the same size. They can all go to press in one form, because thirty-two cuts is about the size of the card-board. The man who gave me the figures says he can put thirty-two of them on his press, consequently it wouldn't make any difference whether you got the thirty-two all different or made up that number by using duplicates.

Mr. Plummer: My thought was to have them go to the individual assorted so that you could have your weekly output in bunches. If I had a mailing list of 300 I would take 325 to 330 or 350, so that I would have extra cards. I think that each man ought to have from twenty-five to thirty a week more than he is going to use in a regular mailing list. These extra cards for special use are in addition to mailing list.

The President: The motion as I understand it is that Messrs. Palmer and Plummer and such others to assist them as they may choose constitute themselves as a committee to work out this scheme without expense to the Association direct. The motion was seconded and on being put to vote was carried.

THE ESSENTIALS OF SUCCESS IN THE MANUFACTURE OF SAND-LIME BRICK.

BY W. H. CRUME.

In considering the essentials that go to make up a successful sand-lime brick proposition, I consider the market as of greatest importance; and the question of making common brick or face brick must be decided first of all.

As my experience has been with common brick only, and as ninety per cent of the sand-lime brick we sold were common brick, I will look at the subject from that viewpoint.

In considering the market you must be guided by the fact that brick is heavy freight and the railroad rates will limit the extent of that market to a comparatively small radius.

The market which you expect to reach being defined, you can by careful investigation determine the price which you may reasonably expect to receive for your product.

In addition to the prices obtained by your competitors, the extent of the market, the resources of and quality of product being turned out by your competitors should be taken into consideration.

If there is always a surplus supply of good clay brick at low prices in your market, I would advise any one to ponder long before entering such a market, or if the location of your sand supply is far removed or inaccessible to the railroads, your operating costs will be excessive and unprofitable.

A great many plants have been erected in this country, simply because of the possession of a sand supply, regardless of market conditions and in some cases where there was practically no market within reach and they have of course failed even though some of them made an excellent brick.

As to sand conditions I will not attempt to discuss them further than to say the sand should be clean and contain a fair amount of silica, and it should preferably contain a good proportion of very fine grains, otherwise part of it must be pulverized. In extent there should be thirty or forty years supply of sand for the initial plant you expect to build, for it has been the experience of most of the successful plants that the initial capacity will not supply the market after the brick are well introduced.

As to lime, practically any well burned lime that runs 80 per cent or higher in calcium will work satisfactorily, though I believe limes running 90 per cent or better are the cheapest ordinarily.

The grade and cost of fuel is ordinarily rather immaterial for the labor and fuel prices must be met by your competitor in the clay brick field, and as a matter of fact high price fuel should work to the advantage of the sand-lime brick plant as the clay brick man uses several times the quantity necessary in our branch of the business, and he must use a better grade.

The plant should ordinarily be located at the source of the sand supply; and should have railroad siding with depressed loading tracks, and if situated within hauling distance of your primary market should have good roads, so far as you can control that.

There should be several acres for your factory and piling ground in addition to your sand property.

As soon as you have decided on the location, and arranged for your railroad siding, get after the railroad to give you commodity rates to your prospective market, first make a list of the points you want to reach within a reasonable distance, especially junction points, then get copies of brick tariffs from the various brick shipping points in your section, from the different railroads, and ask your road for rates comparing with the most favorable you find; this should be done before the plant is erected, for, after the railroad has you located, it is a fight every time you want to ship brick to get a fair rate, and you can not ship brick profitably at class rates.

The question of process and machinery is of course a vital one and if you have all the other essentials you can not make good, if your machinery will not make good, or if your process is so complicated as to make your manufacturing costs excessive.

The simpler you can get your process and the more machinery you can eliminate and still make good brick, the nearer you approach ideal conditions. The machinery should be operated at capacity continuously and make good brick and without continual breakdowns, it should make good brick regardless of varying conditions of moisture in the sand or lime, and the working parts must be accessible so as to admit of quick and cheap repairs.

The plant must be operated at capacity and only machinery that is so operating should be considered for a minute and you should be from Missouri when you are investigating; be shown, and stay right with it

long enough to know that it is doing what is claimed for it; and in buying machinery for a common brick proposition don't let anyone tickle your vanity by telling you that your sand is too good to make common brick, that you should be willing to add to your manufacturing costs and make only high grade face brick.

As the machinery manufacturers are willing to shoulder the responsibility of installing the plant and putting it in operation it is foolish for any one not thoroughly experienced to attempt the installation.

It will take some little time to get everything working to conform to the local conditions to be met in every new plant, but if the plant is essentially correct in location and equipment the manufacturing difficulties are no greater than are met with in the ordinary manufacturing plant, running on a staple product.

Great care should be taken, especially during the first year to get your product to the delivery point in the best possible shape, as the brick attract criticism on account of their uniform appearance and color, and they are liable to be condemned on account of minor faults, that are expected to be present in clay brick.

Never under any circumstances ship brick that are not up to standard quality, rather put them in the dump, or at least in a cull pile, to be sold as such, and then only when you know what they are to be used for.

A carload of poor brick is very liable to give you a set back that it will take some years to recover from, as it gives your natural enemies and the prejudiced a chance to knock, and it makes your friends suspicious and cautious in boosting you.

When you have arrived at this point it is a matter of salesmanship and the man who introduces the brick should have a thorough knowledge not only of the theory, but of the actual manufacture of sand-lime brick, and the man who does the selling should work in and about the plant or at least be in close touch until he absorbs all the essentials, and he should read up on the history of the brick in this country and abroad, as the man selling sand-lime brick in a new territory, must be competent to answer off hand a thousand and one questions, and many of them are ridiculous, but they must be answered nevertheless.

It is simply a question of getting your brick into a few good buildings, they will make friends, price and quality being right, and in your campaign of introduction, don't falter, if the contractor turns you down, see the architect, if he turns you down, see the owner, but fight to the last ditch.

As to management, overhead expense, etc., I will not take up your time as they are the same as would apply to any similar manufacturing business, and must be regulated according to the size of the plant and the policy of the company.

In conclusion, if your plant is essentially correct it should be successful, and the more you become acquainted with good sand-lime brick, the more enthusiastic you will become, and the deeper the conviction that the brick is right, and will in time dominate in its field.

I believe the business is entering upon a new era, the pioneers have blazed the trail and it is now a question of making the most of your opportunities and as the profits begin to come in, put part of them back into the business; into your plant and where possible to acquiring a greater supply of sand, for good sand in many localities on account of the great demand created, is going to become a valuable asset, and as sand-lime brick will endure for ages, so will the manufacturer thereof.

The President: The paper is open for discussion. No response coming from the members, the President remarked, "Mr. Crume, they all seem to agree with you."

Mr. Jackson: Mr. Crume has been in the business for four years. He ought to know something about it.

The President: If there are no remarks on that paper, I will say that Mr. Duerr unfortunately must leave tomorrow afternoon at 3 o'clock. As his paper is the last on the program tomorrow afternoon, it is barely possible that he would have to go before that paper would be reached. He asks, therefore, that he be permitted to give us the paper this afternoon if there are no objections. If there are none, we will be glad to hear from Mr. Duerr on the future of this Association.

FUTURE OF THE NATIONAL ASSOCIATION OF MANUFACTURERS OF SAND-LIME PRODUCTS.

BY H. O. DUERR.

In giving me the task of forecasting the future of this Association, our president has evidently taken it for granted that I am somewhat of a prophet. I am not aware, that I have ever done anything which would entitle me to such a distinction. Prognostications must necessarily be based upon experience and observation made during the past history, and as there is a paper before this Association, treating of the history of the work done by this Association by one more eminently fitted to not alone give the past history but the future of this Association than myself, my work is even more difficult than it would otherwise be, therefore, I trust that you will be kind in your criticisms.

In a few words I would say that, in my opinion, you can not separate the future of the Association from the future of the sand-lime brick industry in this country. I do not believe that the one can succeed without the other. Experience in the past, as you no doubt are satisfied, has taught us that concerted action among the members of this Association, under whatever difficult situations, was the only thing that saved the life of the sand-lime brick industry in certain sections of the country. Just how far reaching the arbitrary action of the Fire Underwriters Association might have been, had not this Association taken hold of the matter, is difficult to say.

In looking about you, you will be convinced that the most successful industries are the industries that have been handled by co-operation among its manufacturers. This does not alone apply to the manufacturing industry but it applies to every branch of business and every phase in life. It is absolutely impossible to make progress alone unaided, at least not such progress as you make when you get the many ideas and the many suggestions which naturally come to you in conversation with others, who are working in the same lines as yourself, but perhaps from different points of view. Then again a great deal depends upon your own discrimination as to how much good you can derive from association with others in the same industry. Unfortunately the sand-lime brick industry at the present time is so scattered that there is practically no competition among ourselves, consequently, the element of jealousy and fear need not enter into our organization. We need not be afraid to be open and frank with each other, for fear that we will be giving a competitor an advantage over us.

I do not feel that our Association has been conducted on good business principles up to date, but more upon a philanthropic basis, which means that the labor and work has fallen upon the shoulders of a few and the benefits, whatever there have been, derived by all the manufacturers, even though they were not members of the Association. If this Association is to live, if the sand lime brick industry is to continue to progress,

it must be differently constructed and that is upon thorough business principles.

Wherever there has been a failure in the sand-lime brick industry, I now speak of the new plants and not of the product, as I do not acknowledge any failures with the product, these failures have been due to lack of business foresight and management. In some cases it has been due to the fact that the plants have been built in locations where there has been no possible excuse for such plants; in other cases it has been due to bad management; in still others to poor plants; and again others to poor materials, (the latter more rare than any of the others). I consider the greater number of failures has been due to poor management superinduced by lack of proper knowledge of the industry, that is somewhat a fault of misconception, believing that it was one of these ideal industries that require no labor but only the clipping of coupons.

It seems to me that it is time after seven years of ups and downs that we benefitted by these failures and from now on made one continuous procession of progress and success.

I am satisfied from the evidence which I have seen and heard that sand-lime brick can be manufactured in the majority of cases cheaper than clay brick, consequently, it can compete as to price with any brick in the market. Sand-lime brick as being made today is better than the common clay brick. It is not as good as the best face clay brick, therefore, the industry should be conducted along the lines of the limitation set forth.

In some respects I think that the Association has made a mistake in its past policy, namely, in being too liberal in giving out information and assistance, which is not often appreciated, because it has not cost enough to those who received it. It is a well known and accepted fact that information which you pay nothing for, you do not appreciate. I think that our open and liberal methods have been a mistake. If this Association is to continue and be a success, it must stand for something. My position would be that we stand first; for quality in our materials—second; for benefits to its members and members only.

My suggestion would be that this Association become an active, live body and that one of the requisites for membership should be that each member should have some duty to perform and that he should perform it. In a general way I would suggest that the membership be confined to active members of sand-lime brick, that the duties be such as would enable us to continue our business with dignity; that our sessions be executive sessions; that each member be in duty bound to maintain the secrecy of such meetings.

Let us become as one large individual unit made up of many members, who feel that their interests are vital and that whatever is done is done for a purpose and that when we get together we mean business and nothing but business.

Certain members of this organization have made a success in their individual plants. Why have they been successful? If we thoroughly understood that we no doubt could go home and introduce some radical changes which would help us materially in our own plants. If the members of this Association, who have been successful, were convinced that every other member was ready and willing to give his aid and assistance and his ideas as developed and that this interchanging of ideas would be kept within the circle of our own institution, they would undoubtedly tell us wherein they had been successful and we had failed. At the present time or in the past there has been no such inducement. The general feeling has been that if a member gave out any information, he was simply giving up a great deal and getting very little or nothing in return. This feeling and attitude is wrong and should be eliminated.

After seven years of careful following our industry in spite of all failures and in spite of the hardships which we have encountered, I am convinced that it is not in spite of these failures but because of them that the sand-lime brick industry is bound to be an unqualified success and while we are still in the infancy of its possibilities. In conclusion, let me suggest that at this time we get together with one idea in our minds and that is that we are going to make this Association just as much a success as we hope to make our own individual business and that when we do this, we are making our individual business. I can not see how you can separate one from the other. If necessary, let us do, as we frequently have to do with our business, reorganize the institution and in reorganizing, let us eliminate those features which we are satisfied are not towards the making of success.

The President: Gentlemen, the paper is before you.

Mr. Plummer: I would like to see something done relative to Mr. Duerr's suggestions and same referred to the committee, who are to report tomorrow.

The President: This matter is already in the hands of the Committee on Ways and Means and the Committee on Constitution and By-laws. They are both working along lines suggested by Mr. Duerr.

Mr. Duerr: I would suggest that we have a discussion to give the committees a cue. It seems to me that it is a most important matter that we get this Association in shape such as will be of benefit to its members. This is what an association is for and if we are not satisfied that the Association as it stands today is what it represents, or what we want it to be, it ought to do things to make it so. The thought in my paper on that particular phase has been this: I am drawing now from my own individual experience of several years as Secretary and also President of the Association, I did an infinite amount of work for people who never came to the Association or became members of it and it does not seem right. There are a great many people who came to us that contemplated going into the business. Well, now we couldn't very well withhold information from them without seeming to be disagreeable, and at the same time we did not feel that we wanted to see people go into the business without a thorough conception of the business, but those same people did not hesitate to take all kinds of time and get all kinds of information and when they got into the business they did not become members of the Association. Now to cover that point it seems to me it could be easily done by a requirement of this nature that the people who want to go into the business become members under probation, which would involve a certain initiation, a certain payment of money to this Association, and which would give them the privilege of the Association for the time being and when they finally became manufacturers, the fact of their having come in under these conditions would entitle them to full membership. Then we would feel that it was to their interest to use the information which was given them in the proper way and it wouldn't be to their interests to give it broadcast any more than would members in full standing. It is absolutely absurd for anyone to say that they have not derived any benefit from the Association. They are either

lying now or they lied before, because to give you plain English language, I have known members of this Association, and men who did not become members of the Association, but who attended some of our meetings, come up to me and say, "Duerr, this has been worth a thousand dollars to me."

I can give you another case. A man got into difficulty in a certain section. He sent a telegram of twenty-five words stating his trouble and wanting me to help him out. I gave him the information and I am sure he must have straightened it out, for I never heard a word from him afterwards. Now, why should we make goats of ourselves in that way. I can not understand it. We had this matter up several years ago, I think it was three or four years ago, as to what action the Association should take in this matter, and it was voted down because we felt we wanted members and wanted people to come in and let them feel what benefits there were coming from the Association. They got all they wanted but did not help the rest of us. I think we ought to go into this matter and see what is to be done, for I am thoroughly convinced that we will have a stronger Association and better members, which means better Association, if we keep together to ourselves and hold the estimation of ourselves a little above philanthropic work.

Mr. Irvine: I will say that what Mr. Duerr says with regard to handing out information freely and liberally is true. The members who attend the meetings occasion very little work on the part of the Secretary to hand them information, but those members who do not attend the meetings require about as much written as a report would make to fit them out and practically all of the manufacturers of sand-lime brick who have never joined the Association are the principal people who want correspondence out of the Secretary. I think this point is well taken, to keep our organization within itself and let those who want anything out of it come and get it in one way.

Mr. Plummer: I am heartily in accord with what Mr. Duerr has said. We have answered questions from different sources. As Mr. Duerr we did it with a sort of philanthropic feeling and were willing to do it, because it was part of the policy of the Association.

Almost immediately following the last meeting of the Executive Committee I had a letter from a manufacturer of sand-lime brick in the West who had run up against a coarse sand. He saw the account in *Rock Products* of our wet pan and sent a list of questions, all of which we could answer, but having in mind the meeting of the Executive Committee, I wrote to him that we had heretofore since the inception of the Association freely given out information of this character, but it had come to the minds of the Association that when anybody wanted information they should come into the family. Our company decided not to give them the information and I gave them Mr. Irvine's address. Mr. Irvine has also written him and I do not know whether he got the information he wanted, but he certainly got nothing out of me relative to the industry. I agree with Mr. Duerr that we make a mistake in giving

this information without they join the Association. Do not misapprehend this, we want to help you but we want you to come into it as a member of the family, being willing to give and receive.

Mr. Jackson: I have attended all of the meetings of this Association from the time it was organized. I do not know, probably I am one of the guilty ones in opening the doors of the Association to all manufacturers of the industry. It was quite a hard undertaking to organize this Association and we did not know but that the proper plan was or would be to ask all manufacturers to attend our conventions and make it as interesting as we could. I did not know but that we could shame them into becoming members and helping defray some of the expenses, but at our different conventions that I have attended and at our last Executive Committee meeting I decided that we had made a mistake, grievous mistakes, and we made up our minds the same as the rest of you have, at least the most of you, that what information we have got cost this Association money to acquire and that if it is of any benefit or assistance to outside manufacturers and they don't want to join the Association and help share the expenses, they will have to get along without the information. I feel that the executive session we have got here today for the benefit of the Association has taken the right course. When other members of the industry find they can not get information without joining, I think some of them will come in. There are others, I know of quite a number that have been getting benefits and have not paid one cent toward helping us to defray the expenses. There are others who are members of the Association who have not had time to attend our meetings. I do not know anything that is more important than to take two or three days off and attend our meetings and help us to work this thing out. Now, it is very important, especially the work we have been doing. It is going to be easier from now on and I feel as Mr. Crume does, that we are starting out on a new era. I feel that if we can get the support of our members and keep right at it persistently to get new members, get some manufacturer into the fold, and have him with us next year. Let us all work with that object in mind and make our convention next year one of the largest we have ever had.

Mr. Squier: When I came here my intention was to be good and listen, but I find myself on my feet quite often. Nothing gives a man so much satisfaction as "I told you so." I did not believe that numerical strength was what was needed. I believe a certain number of people thoroughly interested in this business would accomplish more than opening the doors wide, and that was the way they tied my hands. Now I am thoroughly in accord with what has been said, that if this information is worth anything they should pay for it, and really they ought to pay a liberal initiation fee, but whether that is feasible or not I wouldn't say, but it is apparent that too many have reaped the benefits of the work of the Association without contributing anything either of information or money.

The President: The trend of the discussion seems to suggest in concrete form, what are the conditions under which members should be received into this Association. Heretofore the payment of dues was practically the only thing. The Constitution and By-laws does not define much beyond that. Should the Association take a stand requiring that the members of this Association be connected in some way with sand-lime brick or the sand-lime brick industry and who manufacture a product of a certain standard? That occurred to me while Mr. Duerr was speaking. Should not the Committee on Constitution and By-laws take up in some definite form the question of what are the essentials of membership? Not only to meet in executive session, but every one to represent a product we could all stand back of in the Association.

Mr. Duerr: I think unquestionably the Association ought to stand for a certain product. I think last year the Association adopted certain specifications, that they were satisfied that these specifications were fair and that the Association go a little further and bind its members to agree to live up to such specifications. These specifications, I think, any member of the Association can live up to without a dollar's expense. I think when we do live up to those specifications we are making a brick better fifty to seventy-five per cent than the clay brick of this country, from my observation of the clay brick that I have come in contact with. I feel that the Association, first and foremost, ought to consist of members actively interested in the industry, secondly, that the members will bind themselves to make a product which will stand up to that specification, and thirdly, that the dues of the membership should be sufficient to take care of our legitimate expenses, which means that the Secretary of this Association ought to be paid for his services. There is no man that is capable of filling the office of Secretary who can afford to do the work that is required of him for nothing. I will venture to say that our Secretary in this last year has had to write no less than 1,500 to 2,000 letters and has received a great many, maybe as many as he has written. That means a great deal of time and expense. We can hardly ask him to do that for nothing, and we ought to have self-respect enough not to want to. I think it better to have a membership of one dozen men who are willing to do good work and stand by whatever is agreed to by the majority than would fifty members who are not willing to do anything.

The President: Are there any further remarks on Mr. Duerr's paper. The Committee on Constitution and By-laws has a pretty arduous task on hand and would no doubt like to have suggestions.

Mr. Crume: If we are all compelled to make brick to pass a certain standard, that will force the other manufacturers to make their brick comply with that and this may bring a great many of the other plants in.

Mr. Skeele: I am heartily in favor of all that has been said in regard to keeping our membership active and effective and confining the information of the society to the members. I think other committees might be devised to put all the members to work. The work usually falls on a few members, whereas if committees are formed to have definite work

to do with most of the members of the committees on some work or other, there will be more general work done and more interest manifested. I think perhaps that might be suggested as part of the Constitution.

Mr. Bookheim: May I ask for a little information. What is the initiation and what are the dues? I am a very poor brick maker, but I agree with the reading of this gentleman's paper, Mr. Duerr, but I fail to see where you can get us right into the business like this. Now, take for instance, Mr. Jackson. Now if he was putting out presses wouldn't he put out all the information he could to sell his presses. I agree with everything said and that the quality of the brick should be sustained. We have had our ups and downs and had more downs than ups for the past six years. Now the trouble was mostly that we did not have a captain or pilot for our ship. The crew ran it. Now we are going to run it on a business system. I have brought some of my brick with me and I want everyone to look at them and see if there are any improvements to be made. This is what I came here for, to join the Association and investigate our brick. I hope everyone will look at them and see if there are improvements to be made.

Mr. Plummer: Any man who sells machinery and promotes an industry will tell you a whole lot of things about the business and a lot more than you will probably be able to find in it. The information from the promoter of machinery will be so unlike the information received from the members, that I say get out and ask the members of the Association and get some real information.

As I understand close communion, in Mr. Palmer's idea, was first of all to make the Association stand for something and in any way to create an increase of the industry. Of course, Mr. Penfield and Mr. Jackson look at it from a machinery man's point of view, but we as manufacturers of sand-lime brick look at it from a manufacturers standpoint. As I said before, they think things and we know a few things. Now I believe we ought to make our brick as public as possible, but what I understood by close communion was that we should not give forth to anybody who happened to have a casual interest in the business information that had been gained by real hard knocks and hard work. As an official of this Association for two years, I have discovered some things I did not know before. I had no work to do but to receive money when the Secretary got it. Now, gentlemen, we received during last year about \$900.00. Of that sum we received twenty-five per cent. in the first three months and the rest of it dragged up to within a week or two ago. Now we had all our indebtedness due on the first of the year. They did not pay up and finally the Secretary wrote a letter to me enclosing a list of about a page of those who had asked for information. I went after them. Gentlemen, I got two answers to about fifty letters. One man said he had gone out of business. One man said I was mistaken. As a matter of fact the Secretary's work of the past year, about seventy-five per cent of it has been writing gentlemanly requests to the members whose names were on the list to please pay up so we could pay

our bills. Now if this Association will stand for the payment of its dues at the beginning of each year and only members of the Association receiving information when they have paid their money. By the way, when a man is going to start a brick plant and only has enough to start a brick plant and can not put up \$25.00 to get some real information, I do not think he wants the information very bad. I am perfectly willing a man should get off after the first year if we are not worth anything to him, but if he will spend thousands of dollars in experimenting he had better put up \$25.00 and ask some questions, because the answers will be worth much to him. I wouldn't for a moment do anything to make it appear that our business was a secret. I do not think it a secret, but I do think that what some of us have discovered is worth asking for and it is only right to give it out when a man has joined the family and is willing to help bear the burdens.

Mr. Duerr: I think that we have got two lines of thought here that ought to be separated. There are two kinds of publicity, one is the publicity of the products and the other the publicity of our troubles and how to get over them. Now, as I understand it, the point we are making here is not to eliminate the publicity of our product, but what the public is interested in. The public does not care a rap whether we have troubles in our plant. The public is only interested in the brick itself. I agree with Mr. Penfield and everybody else that we want just as much publicity as we can get on that subject, but the publicity we are objecting to is the giving of personal information, that is, giving out information to various individuals that has been accumulated by this Association through its members which has been most valuable and will continue to be more so. I do not for a minute think that we have come to the end of our string as to the improvement of the brick and the making of our brick. I think there will be much improvement made in the next five years, if not more than in the last five years, and it is that information that we want to keep in a close corporation, just as any manufacturer of machinery or any other manufacturer has certain problems to work out in the manufacture of his machinery which he keeps to himself and which he does not publish to the world at large. He may exchange his ideas with another fellow manufacturer from whom he gets value received in the way of information or something, but he is not going to tell every Tom, Dick and Harry that comes along and wants to start up a machine shop. That is our position and no other, as I understand it.

Mr. Holden: I move that we accept Mr. Plummer's invitation to visit his plant. I dare say if we are going to go he would like to know it today. The motion was seconded and on being put to vote, carried.

ONE OF THE SUCCESSFUL WAYS OF PREPARING
COARSE MATERIAL.

BY W. E. PLUMMER, JR.

Mr. President and Gentlemen: The speaker feels that what he has to offer is hardly worthy of so formal a name as a "paper" upon the subject named. He had only expected to make an informal statement to the Association of experience of the past season, and trust you will pardon what may appear as sort of rambling statements. To put the matter clearly before you, I will state that when we first began to operate our brick plant and for a couple of years our bank ran to quite a large proportion of fine sand. In 1907, we began to run into coarse sand, but were able to keep up a fair proportion of fine sand but in 1908 we were only able to run our plant by going over our bank and selecting pockets of very fine sand, which we carted in at considerable extra cost, thus enabling us to get our season's run out but by that time all of our deposits of fine sand were exhausted. In the meantime we had sent several tons of our sand to grinding machinery manufacturers for tests, and had same returned to us and made into brick.

We had improved the appearance of our brick, but quality did not seem to meet our expectations. Our natural sand was so coarse that our brick would not stand handling to the kettles, and when hardened corners were loose and easily rubbed off. In all our experiments up to this time we had also been confronted with the fact that in order to grind the sand it must be dried. This we did not want to do on account of expense, etc. attached to this process and furthermore it was not practical to grind all of our material so were required first to mix equal portions of lime and dry sand and after grinding to mix with balance of the sand for complete mixture. As is well known by most of us mixing sand and lime by pug mill is at best a trying proposition, and never perfect in results, as witness of which note the little pieces of lime shown in brick and occasional pockets of sand absolutely without any lime where a bit of loam had rolled through the mass. You can readily see we were to use a common phrase "up against it for fair." We must grind or quit. Now incidentally here is where the National Association got in its valuable work. The matter was one that worried us, and speaker suggested that before we finally adopted some device that we attend the annual meeting of the Association and see if we could not get a suggestion that would help us out. Gentlemen: we got it, as we all can if we attend these meetings, and listen and ask questions. At the meeting we received our inspiration first from Mr. Jackson, in his paper on "German Factories" and rounded up same to practical success by conference with machinery manufacturers. As a result of what we learned at Washington, we immediately entered into arrangements for a practical test of our sand and lime through a wet pan, and the results were not only successful, but really astonishing. The best brick we had ever been able to put out commercially, would show from 2,000 lbs. to 3,000 lbs. per square inch for crushing test. The product of our experiment ran up to 6,000 lbs. to square inch. "Nuff said" we installed a 9-foot wet pan, and immediately stalled our engine. The estimate power required for this pan was 25 to 30 H. P.

We have an engine 12 x 18 running 225 rev. and as before stated, we stalled the engine. This was partly due to caking of material upon the pan, but our later experience would indicate that 40 to 50 H. P. is nearer the correct figure for operation of the pan. The mixture of sand and lime stuck to the mullers and pan, and after two or three days of futile effort to make things go we suddenly had a little common sense come to us, and filled our pan with old dry brick bats and let her run for

a day and polished up things, and life looked better. We still however, had trouble with caking on the bottom of the pan due to the impact of the heavy mullers. We then got after the manufacturer of machinery and between us we soon overcame this trouble, by putting in what we call disintegrators and changing the shape of plows. From this on we began to get results. We installed the pan with expectation of getting sufficient mixture for 20,000 brick and grind and mix five batches per hour. We found we could not get the capacity, and so cut down the time until we now run five minute batch or twelve batches per hour, which will give nineteen to twenty thousand for ten hours run. As you will note from what I have just said, the pan is "batch mixer and grinder" and has to be emptied when each batch is complete. This is done with a large shovel hung on a swivel and so far as our experience has shown is practical and quick, although free to confess, did not think so at first. Our operation for our common brick is as follows:

We dump into pan three cubic feet of sand and two and one-half cubic feet of lime (hydrate) and run for three minutes and then drop in six cubic feet of sand and the whole mass runs for about a minute and one-half and then the pan is emptied and operation repeated. We use forward dump concrete barrows, which are shaped like a flour scoop, and all our material is on a platform level with top of wet pan and barrows loaded ready while mixing is going on, so no time is lost. As you will understand, the pan runs at full speed all the time the emptying being done while the pan is in motion. The action of mullers and plows and rotation of pan has most remarkable mixing effect, as in less than a minute from the time the sand and lime are dropped into the pan not a sign of separation is visible. A few minutes ago we left the pan in successful operation, but, after the pan had been running about a month, the mullers began to wear in the center of the rims. It alarmed us, but the manufacturers of machinery said this was all right; that they always did and would not affect the results. We were from "Missouri" but kept quiet. After sixty days the wear was more apparent and at the end of ninety days worse, so we called aloud for help. The specialist arrived, and almost convinced us we were wrong, but not quite. The result was that the machinery manufacturers whose interest and that of users of machinery is really mutual, saw the joke, and we now have divided muller rings, that is, instead of one rim or tire on each muller we have two rings clamped together with bolts so that they can not be separated by sand working into the joint. We saw an immediate improvement in the results as soon as we got back to the flat faces again and although now in operation for about forty-five days, there is almost no wear.

The object in having two rings instead of one is to allow for their removal and reversal, thus bringing the high spot in center of the muller where the greater wear exists owing to the pivotal movement of muller in contact with the pan. The plan is as soon as center of muller rims wear, say to show one-eighth inch to take them off reverse and run until the center is again worn low and then repeat the operation. Now as to results.

We have at this meeting samples of natural sand, five minute mix and fifteen minute mix, for your inspection and believing that the "proof of the puddin' is in the eatin'", can only say, "have a look" for yourselves and see. The whole of our operation for manufacture of brick is now as follows:

Sand from bank to wet pan with the hydrated lime. From pan to press to hardening cylinder to cars for a customer, if we can catch him. This really seems very simple doesn't it.

As a little aside will further say that it is not necessary for hydrate to be dry in this operation, in fact we found by experiment that we could get the best results from hydrate so damp that it would pack in your hand under pressure. However, this damp hydrate required a fairly dry sand, otherwise the final mix was rather too moist to work well through the press. The greater the allowance of time for mixing, the drier the mixture will become for the material warms up under the friction and moisture evaporates rapidly. The sand we use is also on exhibition and samples do not carry nearly as much gravel as we often show sometimes as high as ten to fifteen per cent of gravel.

We do not screen it out before grinding, but at head of the elevator from pan to press we have a screen of $\frac{3}{4}$ -inch mesh, and anything that will pass this goes into the brick. We use the screen more as a protection against the cakes of mixture that come from under the mullers when emptying the pan, and are likely to stop our feeding device to press. These cakes of sand and the coarsest gravel are returned and run over again. You can judge of the impact of the mullers upon mixture when it is known that pieces of these cakes about one inch thick, when put through the hardening cylinders come out as hard as the brick. Our commercial product of brick show from 3,500 to 5,000 pounds per square inch crushing test and absorption runs 11 to 12 per cent. As all good papers finally end, it is certainly apparent that this poor attempt should stop. I thank you for your attention and shall be pleased to answer as best I can, any questions you may desire to ask.

Mr. Plummer: You will note that there is no mixing done in our process except in the pan. I want to call your attention to one point why we believe the batch mixer is best. You get an equal proportion of sand and lime subjected to a longer grinding. We put in equal parts sand and lime first and then we put in the balance of the sand and it is ground some, but when the pan is full of the mixture it does not begin to grind with the same rapidity as it does when it has a smaller amount. But so far as the mixing is concerned, we can not see any difference. The lime has all disappeared in less than a minute and seems to be a complete mixture. From our point of view, the best results are obtained by getting uniform proportion of sand and lime, and so far as the matter of expense is concerned we are using one more man than we did before. As a measuring device the wheelbarrow seems to be the proper thing.

Mr. Carmichael: Mr. Plummer, I would like to ask if you have noticed any difference in the quality of your brick when you used dry sand, adding moisture after grinding it, or whether you got a better mix in using damp sand in division grinding?

Mr. Plummer: I am afraid I can not tell. We sometimes have had to add water. You understand we have had but one season's experience. We usually carry four or five days' supply ahead in the plant. Sometimes we have to take our sand pit men out of the pit, and then we run on this stock in store. The sand at times became quite dry and we had to add some water to mix it, but if it made any difference I am not prepared to say. I think that the sand which we started with early in the season, which of course was as damp as at any time, made the best brick we had, but in the handling we find it very difficult to feed the press and have the molds fill alike when the mixture contains too much moisture. We

have to keep the mixture pretty loose or dry. The brick are so hard when pressed that you can stand on the edge of them without any difficulty on any smooth surface and the brick does not break off on the corners.

Mr. Duerr: I do not like to harp back on the old subject all the time, but it is very vital, it seems to me, to the Association, and Mr. Plummer's paper gives us a concrete illustration of the value of this Association. What have we learned? We have learned several things, both the manufacturers of machinery and ourselves. The manufacturer of this machine told Mr. Plummer he could run it at 25 h. p. They believed it, and undoubtedly it can be run on 25 h. p. on certain materials. Here is a new condition. They have discovered that this is not so. That it takes 40 h. p., frequently more. Fortunately, Mr. Plummer could take care of this, but some might not be able to. He might have to go to a good deal more expense than he expected to when he started out to put in this pan. Again, we have learned that the mullers, as he calls them, require two rings, that are an additional expense to the manufacturer. An expense to the manufacturer of brick because although the machinery manufacturer no doubt made the fault good, there was a loss of time and a loss of output, which means dollars and cents. Now, if some of us are expecting to have to do something of this kind, they are in a position to do exactly what Mr. Plummer has done, with the exception that they can eliminate those difficulties to themselves that he has discovered and thereby eliminate to themselves time and expense, which would more than cover the cost of this Association several times over in two or three years. This is simply a concrete case, which illustrates the point which we have tried to make as to the value of this Association, and I do not believe there is a single member of this Association that has not at some time or other gained information that has more than paid his expenses.

Mr. Carmichael: Mr. Plummer's statement and the following statements only bring before the convention another thing, and that is that the machinery man does not know it all, the brick man does not know it all, but we are so closely bound together and working together to bring forward the sand-lime brick as nearly perfect as possible. The fact that his experience in Mr. Plummer's plant *has shown the policy* of having those mullers put in to be polished, whatever the other conditions of the pan which require special construction for sand-lime brick work only shows to the manufacturer of machinery the advantages which are to his machine and to the brickmaker of the future in embodying all of those implements in his machine. These conventions also help the machinery men in perfecting their product, which none of us knows all about.

At four o'clock a flash light picture was taken and the convention adjourned until 9:30 the next morning.

Morning Session, December 7, 1909.

The President: While we are waiting for the committees to find their reports, the Secretary has a question box to open and dispose of.

THE QUESTION BOX.

Question No. 1 was read as follows by the Secretary:

"What is the best style or type of bulk lime crusher? Are there any which crush or pulverize finer than a pea, and is there a type that is enclosed, to prevent the lime dust from floating in the air?"

"My experience has been rather unsatisfactory—the men refuse this job because of the dust being almost suffocating, and it is a case of breaking in new men almost daily."

Mr. Carmichael: I am a machinery man, Mr. President, and when you speak of crushers there are a large number of crushers which will crush lime very satisfactorily. There are points to be considered as to the economy of crushing lime relative to the wear and tear on the machines, the horse power required to produce certain capacities and certain meshes of fineness.

The President: Let me read the question. (Reads question again.) Now we will have to ask some questions to get down to the facts as to his troubles and we might be able to give some suggestions that may help him. That is what we are here for, to help the man who needs help and at the same time help ourselves.

Mr. Carmichael: Well, the jaw crusher can be set to crush almost any size of lime down to wheat size after the preliminary rough crushing or coarse crushing is done. There are vertical mills and different types of fine grinding mills. I have found that a very satisfactory way to crush lime has been to use what is called the jaw crusher or rotary crusher, reducing the lime to the size mentioned and then passing the lime over a vertical emery mill, especially where a capacity from five to ten tons per day is required. Of course, there are heavier mills which will give a much larger capacity, but it will make the finished product larger size than a pea or corn.

The dust question is one which all lime manufacturers, I believe, realize that they have to contend with. However, there is very little dust connected with the rotary crusher and vertical emery mill if properly installed.

Mr. Jackson: I would like to ask just one question. Is this crushing the lime as it comes from the kilns or hydrated lime?

The President: It is lump lime.

Mr. Irvine: In the best type of hydrating mills they take their lump lime just as it comes from the kiln on a belt. That is when they draw it, and it comes into a Sturtevant open-door crusher without any dust whatever. I mean the whole plant, around the crusher, coming from the hydrator, in the bins. Right around the bagging apparatus there is a little film of dust. It strikes me a crusher on that type small enough to be used by a sand-lime brick proposition might be the thing.

The President: How fine does this mill grind?

Mr. Irvine: Nothing reaches the first elevator that won't pass a one-eighth inch screen, at least that is my recollection of it, but I am sure it is mostly powder. Perhaps any size could be secured.

Mr. Carmichael: Is there a collecting system with this installation you refer to?

Mr. Irvine: None, whatever, so far as I recall at this time.

Mr. Skeele: The Sturtevant open-door crusher don't claim to crush finer than cracked corn size. I wanted them to give me a mill that would crush finer and they did not make it. If you want a finer product you will have to get something else. I quite agree with the writer of that question that the dust is simply unbearable. I can only get the long suffering colored brothers to do the work there. The white men won't do it at all. If anybody has got any suggestions to cut the dust down I would certainly like to know about it. The most dust comes from handling the lime into the crusher. It must be shoveled. It can not be put in on a belt. It has to be shoveled and the dust is very bad.

Mr. Loewenthal: Our brother from Savannah has answered the inquiry so far as size is concerned. Wouldn't an exhaust fan provide for the dust. Couldn't it be closed in a room?

Mr. Skeele: It would eliminate a lot of valuable lime. You have to pay a man a pretty good price to take that job.

Mr. Plummer: I will say that there are dust separators that could pick up the very fine dust and afterward deposit it, working on centrifugal action, and very little dust would escape from the outer fan. In any rotation action there is lime which is a little heavier than the air, so that if you were using an exhaust fan you would probably find it economical to save that. The centrifugal separator would drop this dust to any place wanted. It would have to be a room or bin into which that could drop. Of course a very little of the fine dust would go overboard, there is some escape, but very small percentage.

Mr. Carmichael: There is one point that one would want to watch when they place an exhaust fan, and that is that the current which you create will blow more dust than you would ordinarily have floating in the factory; therefore, when you do put in and consider an exhaust fan by all means consider some sort of a collector, even if no more than canvas sacks. This is a very simple proposition, which I believe is being handled very satisfactorily by some hydrators.

Mr. Duerr: We have been talking about simplifying plants and not complicating them. The fan means an expense. We have bought a

rotary crusher with a top big enough to dump a wheelbarrow of lime on at one time. This crusher is connected with an elevator at the foot and a man simply runs into this elevator with a wheelbarrow of lime and dumps it on the crusher, turns around and goes out. It is no trouble at all. The only dust he makes is the dust which comes from the dumping of the wheelbarrow, and we have had absolutely no trouble with that and no dirt or dust to amount to anything. This is inexpensive.

Mr. Carmichael: Another point regarding Mr. Skeele's query, do you crush caustic lime just as you receive it, or do you allow it to lay to get air slacked?

Mr. Skeele: That depends on the stock on hand. Sometimes we crush it immediately and sometimes three or four days ahead.

Mr. Carmichael: I have never had trouble handling caustic lime from the bin to the crusher.

Mr. Skeele: Then it must be a closed crusher.

Question No. 2 was then read as follows:

"How can buckling of thin side liners be prevented? How thick should they be to overcome buckling?"

Mr. Jackson: I would like to ask, gentlemen, how thin you would call a thin liner. We make and use the hardened steel liner about an eighth of an inch thick. We started to hold them on the back plate with four rivets, which we found inefficient, and now put in six rivets and have no trouble about their buckling. I do not know, some users have as thin as a sixteenth of an inch, but I have never had any experience with that kind.

Mr. Plummer: We use the sixteenth inch liner and have no trouble with it. We use six rivets in the large liner and four in the small. Once in a while the liner gets buckled but it is very rare. A man has to be very careful in riveting up a sixteenth inch liner. We put in the rivet with the head on the inside and rivet up on the back, using center punch to expand the rivet. Rivets put in this way are not likely to hurt the liner. The liners are counter-sunk on both sides so that they can be changed, and when rivet is tight we smooth up both heads with emery wheel.

Mr. Skeele: What liner do you use?

Mr. Plummer: We are using the Disston liners.

Mr. Schultz: We have been using the 5/32 inch liners for three years and have not had any trouble. They have given entire satisfaction.

Question No. 3 was then read as follows:

"In my rotary press feeder the material packs under the blades, making it necessary to stop the machine frequently to loosen the material in the hopper. This greatly increases the power required to run the press while the material is packing under the blades. Is there any way to prevent this packing of material, and if not what is the best way to loosen it up?"

Mr. Plummer: Does this gentleman refer to the agitator?

The President: I might read the question again. (Reads question again.)

Mr. Plummer: I would say that we have proven this year what did not seem at first to be feasible to the manufacturers of the machine, that the agitator is not necessary; so we have taken it off and are not using it at all. This year we tried a galvanized iron feeder with straight sides to cover two pockets. We started in with the feeder three feet high and cut it down from time to time until finally we got the feeder on the table only eight inches high. On one side of this shallow pocket or feeder is an apron running up to the bin from which the material comes. My first plan was to put an overhead feeder in there, but as a temporary make-shift put a bag on there to test out. The thing works very well. This bag is made of canvas about twelve inches in diameter. The action of the sand in that is sufficiently retarding so that it will help hold it back. You only have to touch it with your hand and the whole feed begins to start again. The result is we are running there day after day without any trouble at all.

Mr. Crume: We had some trouble in the first of the year. After talking with the man at Sugar Grove, I thought that if the scrap iron worked there it ought to work out on these plates. I had some plates cast out of scraps right at the last of the heat and those plates run three or four weeks without renewing. The cost is small and we practically have no trouble at all.

Question No 4 was then read as follows:

"Is there anything that can be done with our waste material by turning out some kind of a by-product?"

Mr. Holden: In our plant we have a good deal of tailings from our sand. We use a coarser sand than others and do not grind it. We have quite a little difficulty, or have had at times, to dispose of the waste materials if not turned into something of a by-product. We have turned it into concrete.

Mr. Loewenthal: In answer to the tailings, I do not know where the gentleman is located or what call there is for a by-product, but I have found it a good thing to sell to the railroad on the job. There is a demand for tailings in all localities for concrete work, for sidewalks, for ordinary gravel walks, and railroad work.

Mr. Duerr: I think I can answer the question, anyway. Several years ago we made an experiment by taking brick bats and putting them into the lime crusher and crushing them up to pieces as big as a quarter of an inch in diameter. Various proportions were found by taking the bats and distributing them in the batch and adding ten per cent of these brick bats. Very much to my surprise, I found these brick fifteen to twenty per cent stronger than the ordinary brick, so that the crushing up of the brick does not hurt the brick, but the use of it is helping it. The crushing of the bats of sand-lime brick is not a difficult matter. Of course, I wouldn't tell this outside. It does not take much horse power

and I do not believe the expense amounts to much. Without disturbing the percentages at all, simply add ten per cent to the batch.

Mr. Skeele: I want to ask if any objection has been raised to their use in concrete by any of the members. I found that while I have made no attempt to sell bats, I was told some parties at Ft. Scribner absolutely declined to consider the sand-lime bats for concrete work.

Mr. Duerr: When we had a great many bats, which was some years ago, all our bats were used in concrete and made very good concrete. Contractors were very glad to get them. We used them in a great many foundations in our own plant. We had occasion once to dig up a section of this foundation and found it was extremely hard.

Mr. Loewenthal: I can confirm what Mr. Duerr has said. I have made foundations with bats of my initial make. I had occasion later to put in some new foundations and found all of those early brick as solid as stone.

Mr. Schultz: I can also confirm what Mr. Duerr says. I have used them for concrete work and am using such materials all the time. If we had the bats we could use even more than we do. We do not make bats to speak of, but the few we do have make ready sale without our even having to say anything about them. The concrete people come after them to use for cinders, etc.

Question No. 5 was then read as follows:

"What is the best way of getting sand into the plant from a bank three hundred feet away? What is a simple manner of hydrating lime?"

Mr. Loewenthal: I probably have had some experience of that kind, as far as conveying sand is concerned. While my plant is directly on the bank, it did not take very long to carry away the immediate bank. I favor a system of three or more conveyors. I have an inclined belt which runs into the pit. That passes through what I call a wire screen, to take out all stone three-fourths inch or more, and that drops back into the buckets. The coarse sand drops onto the belt conveyor and that in turn drops on to the inclined conveyor, about twenty-two degrees, into the building and is fed to the rotary dryers. I have no trouble in conveying that way. The conveyor is separate from my plant. In other words, if I want to convey sand in the night I do not have to operate the engine. I put on the electric light power. This is sufficient to run this belt and still operate my electric light plant. I have only two men on the bank. I have the bucket conveyor arranged so that I can swing it to an angle of forty-five degrees. Of course, in having belts outside you have to provide against the wear and exposure to the elements by having them covered. I have mine so arranged that I can get to it at any part.

Mr. Godart: What is the relative comparison?

Mr. Loewenthal: I found the first year we did not take care of the belts by enclosing them we had considerable trouble. However, since we have enclosed them we have had no trouble. We covered them with a roof of tar paper.

Mr. Plummer: Do you use rubber or fibre belts?

Mr. Loewenthal: We use rubber for carrying belts and canvas of heavy ply for the other, on account of the buckets.

Mr. Squier: What power do you use?

Mr. Loewenthal: A light engine, about 80 or 85 horse power.

Mr. Jackson: That is a proposition I suppose that has bothered the manufacturers of sand-lime brick as much as any other apparatus around the plant. The Bond Sandstone Brick Company, at Lake Helen, Fla., where they have no frost like we have, have a belt arrangement very similar to the one Mr. Loewenthal refers to. They have a short conveyor elevator at an incline that runs down into the pit and then from there on they have a conveyor about two hundred to two hundred and fifty feet long, and this swings around on a pivot and follows the bank. They make 40,000 brick a day and three colored men shovel on to the belt and keep the factory supplied for 40,000. As the sand is used they simply take bars and push this conveyor around into the bank so that they can shovel on to it. I do not know what you would call what we use in Saginaw. We used the dump car to start with and wheelbarrows as long as the plant was close to the pit. We now have to take the sand 1,000 feet and are soon going to have to get further away. We started in in 1908 using a horse and the dump cart. We got a man and a horse for \$2.50 a day and a man to help him for \$1.75, or \$4.00 for every dump cart and horse. They get in the sand for 25,000 brick a day. They can not do more than this and so we have to keep a surplus for a rainy day. In Grand Rapids we do not have to go quite so far for our sand. We probably bring our sand there 150 to 200 feet. We find it a very good arrangement with the dump cart. The sand is light colored and does not run uniformly. We get a cart load of coarse sand and a cart load of fine sand and it makes a very good mixture. We get along very well with a man and horse and assistant, and they get in the sand for 25,000 to 30,000 brick a day.

We are running the Saginaw plant day and night and turning out 35,000 to 45,000 brick a day. Four men and two horses and carts get in the sand without any trouble, and we are going to do the same thing in Grand Rapids.

Mr. Duerr: Why not benefit by people who handle material more than any other, and that is the anthracite coal people. The most popular method of conveying there is the belt, and consequently we have a right to assume it must be the most economical. One of the biggest and probably best posted people is the Robins Belt Conveyor Company, of New York City. I think probably any member could take up the matter with them and let them work it out for them.

Mr. Jackson: That belt conveyor is all right, but you have got to get your supply to the belt and when you get further away from the factory it will not work.

Mr. Duerr: Get belts so that you can move them around.

Mr. Loewenthal: I utilize my belts for a second process. The man who feeds has been broken in so that he feeds a certain number of shovels per minute. There is no handling of my sand from the time it is put on the conveyor until it comes out in the shape of brick.

Mr. Plummer: How wide a belt do you use?

Mr. Loewenthal: I use about a fourteen inch belt for carrier belting.

Mr. Godart: At our plant in Minneapolis we have a very serious condition during the operating year, and as our sand contains a great deal of moisture, eight or ten per cent, it occurred to me that the belt conveyor was not practical, and the moisture would get into the belt and crack it. I will explain an idea that I have been working on and that is to get a small hoisting engine, an elevator and a tram. I think this would be the most economical manner of getting in our sand. If I am right in my theory and in the comparative costs in the system which I have outlined, the hoisting engine, grab bucket and aerial tramway I do not see why I can not cut the present cost in two. I would have the hoisting engine on a track, of course, so that it could be moved around, and it would not necessarily be so heavy but that it could be moved. The buckets, of course, would be self emptying.

Mr. Jackson: Answering Mr. Godart in regard to the belt elevator or conveying in cold weather, now we have one short conveyor carrying our sand over a driveway, and when it is cold and gets down to 20 degrees and below, which we quite frequently get in the winter time, we have to have one man looking after that belt all the time. The sand contains so much moisture it will freeze on the belt and get under the belt and below, and we have to shut down and chop off that frozen sand and moisture. It is impracticable in the cold climate where you are trying to run in the damp sand and I would not recommend the belt conveyor in cold climates.

Mr. Carmichael: My further suggestion on the grab bucket which Mr. Godart has taken up, is to use a Universal joint in the plant for operating a wire rope system. With this Universal joint pulley in your location where you have a great amount of sand to handle there, couldn't you have a series of towers or have a movable tower so that by using the Universal joint in conjunction with the tower it would do away with the hoisting.

Mr. Godart: I had a little correspondence about that but had not gone into it very fully. It seemed from the information of machinery men on that subject it was hardly practical.

Mr. Carmichael: I do not see why the Universal joint wouldn't work in the same connection with your aerial tram. For instance, at Lake Helen, they use a conveyor in which they make a circle. In fact, the Universal joint is known as a very practical process where you want to work in a certain radius on a sand bank, and it is only a question as to whether the same method could be used in connection with the aerial tram. If so, you would save the expense of the hoisting engine and do

all the operating inside and it doesn't make any difference whether it is raining outside or not.

Mr. Ericson: I have seen a combination of the inclined belt conveyor and aerial tram rope conveyor which was in successful operation. I do not see why Mr. Godart wouldn't be able to use it in his plant. This requires very little machinery except a belt conveyor, and that belt conveyor worked all right and this was in cold land. In regard to freezing, we put in a belt conveyor at Lebanon, Pa., for handling coke which was quenched. Of course, there was a lot of moisture and this worked all the year around as well in cold as warm weather.

Mr. Duerr: We have two propositions. You spoke of using grab buckets for digging. Now, if you want to combine these two, the cheapest method is using the grab bucket and cable way. You go into the cement regions and slate regions of Pennsylvania and you will see any number of them. They are made stationary, for example, a stationary tower at the plant and one movable tower to move to the bank. Unquestionably this is the cheapest method if you have got enough material to pay for the installation of such a plant. Your method of digging sand with a grab bucket on a derrick is a very cheap method of digging and then elevating to the belt conveyor. We handle our sand entirely with a grab bucket on a derrick and it is costing us about $2\frac{1}{2}$ to 3 cents a ton.

Mr. Jackson: Your source of supply is stationary, ours is changing.

Mr. Duerr: I would overcome that by a movable apparatus.

Mr. Jackson: With something that can be readily moved.

Mr. Duerr: Of course, the problem you put up a little while ago.

Mr. Carmichael: We are building at the present time an equipment which includes a Universal joint to take in a radius of the sand plant, also the Universal belt conveyor, in which we go back to Mr. Jackson's proposition of the man and horse, but we use a scraper. The man goes to the bank with the scraper and feeds to the Universal joint, which works on a track which is movable.

Mr. Godart: I wish to withdraw my second question.

Question No. 6 was then read as follows:

"I am in search of a measuring and mixing device that will not alone measure and mix proper proportions of sand (and lime) and coloring matter, but will at the same time crush such particles of sand and lime as have caked or balled up in the silo. I find that the subsequent mixing mixes the color with the other matter but does not break up the lumps, consequently these lumps remain as whole, uncolored particles in the hardened brick. An expression of some member's experience on this head will be greatly appreciated."

Mr. Jackson: Mr. President, I believe the proper way to handle this is for this gentleman to take that up with the manufacturer of measuring machines. We have tried nearly every kind of measuring machine. I would take that letter and send it to the manufacturers of measuring machines.

Mr. Carmichael: There is a possibility of running into trouble in measuring material which comes from the silo, especially if it has lumps. We machinery people are going to take up this subject, at least, I am in the interest of the brick manufacturer. You have got in the drum measuring machine a series of bins, circular in form, in which a plate on a bolt revolves and knives cut off certain percentage of material and drops into the mixer. In the first place, one must be careful to note that that is done so that it will freely slide from the different chambers.

Mr. Jackson: We have tested out nearly every machine on the market, but find that if the lime contains a little more or less moisture, it immediately changes your material and you get either too much or not enough lime. My trip to Europe last year I took up the question of measuring machines. I think every factory I visited had tried some form of measuring machine, but they all told me for good results the best thing is the man with a shovel.

Mr. Carmichael: That is very true where you have a difference in moisture, but you can take dry sand and calculate almost the exact result. Now the question regarding the breaking of lumps.

This concluded the question box and the report of committees was called for.

Mr. Godart: As one of the members of the Auditing Committee it seemed to us as a whole that a more complete system of bookkeeping should be engaged in. It seems from the beginning of this Association all attempt at bookkeeping has been very slack. Of course, this is casting no reflections on any one, but in order to make accurate accounts we make that as a suggestion.

Mr. Irvine: This is a system of bookkeeping which none of you understand. Our bookkeeper who handles this matter has suggested from the first time he saw the book on which the accounts of this Association are kept that we should provide a new one and make the accounts in such lucid form that they can be readily balanced, but at the time that he made this mention there positively was not a dollar in the treasury and I did not feel like we could go to the expense of buying a book and paying a bookkeeper to transfer and untangle the bookkeeping. He said it would take him about three weeks to attend to it and I did not feel like shouldering that much responsibility. I believe I wrote to Mr. Duerr, who was President at the time, and he agreed with me that we had better wriggle along.

The President: I think the Association can afford a new set of books now and have a balance struck.

Mr. Squier, chairman of the Ways and Means Committee, read their report as follows:

Mr. President: Your committee have to report that the situation seems to be about this. We have available in the treasury, \$225.00. There should be received for dues, \$350.00, possibly a little more, but we have taken the sum of \$350.00. As against this we must provide for this year's business.

Mr. Irvine has a bill of \$200.00 as secretary, which should be paid, the unpaid bills which have been submitted and O.K.'d by the secretary as being correct for postage, printed matter, etc., and what we owe Mr. Duerr for postage, amounting to \$307.64.

Presuming Mr. Irvine's estimate is correct, we would need \$225.00 to publish an abridged report of the three meetings, making a total of \$732.64. This will leave a deficit.

We would therefore recommend an assessment of \$5.00. This will give us at least \$175.00 more, making a total of \$736.10 to meet \$732.64. We also would recommend that the dues be made \$15.00 a year instead of \$10.00.

During the preceding years there have been unusual expenses and we see no reason why they should occur again. The fight with the insurance people is over as we understand it and there would be only the running expenses of the Association. We think that the sum of \$15.00 for dues would be ample to take care of the current expenses of the organization.

Respectfully submitted,

(Signed) W. K. SQUIER,
JOHN L. JACKSON,
A. BERG.

A motion was made and seconded that the report be accepted as read and the amendment of \$5.00 assessment be added. This motion, on being put to vote, was passed.

The report of the Committee on Constitution and By-laws was then called for and Mr. Skeele, chairman of the committee, read the report as follows:

CONSTITUTION OF THE AMERICAN ASSOCIATION OF MANUFACTURERS OF SAND-LIME PRODUCTS.

ARTICLE I.—Name.

SECTION 1. The name of the organization shall be the American Association of Manufacturers of Sand-Lime Products.

ARTICLE II.—Objects.

SECTION 1. To promote the interests of those engaged in the manufacture of all sand-lime products who are members of this Association, to establish and maintain more intimate and friendly relations between manufacturers of sand-lime products, to define and maintain high standards of brick and other products, to urge all manufacturers of such products to become members of this Association.

ARTICLE III.—Membership.

SECTION 1. All persons, firms or corporations, directly interested in the objects of this Association are eligible to membership.

Application for membership must be made through the secretary of the Association and be accompanied by the admission fee. Such application may be made by individuals or companies, but only one vote will be allowed for each membership.

Each application for membership shall be submitted to the Executive Committee subsequent to its receipt by the secretary, and the Executive Committee shall have the right and privilege of rejecting the application of any person, firm or corporation deemed undesirable for election to mem-

bership, a two-thirds vote being necessary to rejection. If for any reason the Executive Committee shall deem a member of the Association undesirable for membership, such member may be deposed from membership by a two-thirds vote of the committee. Any applicant having been rejected or any member having been deposed by the Executive Committee shall have the right of appeal to the Association.

SEC. 2. The admission fee to this Association shall be \$25.00 for each member, payable in advance. The annual dues shall be \$15.00, due and payable in advance at each annual meeting.

ARTICLE IV.—Meetings.

SECTION 1. The meetings of this Association shall be held annually, at such time and place as may be determined by the Executive Committee, public notice of same to be given one month before the time of meeting.

ARTICLE V.—Officers.

SECTION 1. The officers of this Association shall consist of a president, one vice-president, a secretary and a treasurer, who shall be elected by ballot at each regular annual meeting, all of whom except the secretary, from among those members of the Association who shall be in the active manufacture of sand-lime products, provided that no person shall be eligible to the presidency who has not attended one previous convention.

It shall be the duty of the president to preside at all meetings of this Association, and in all rulings and decisions in the transaction of the business of the Association he shall be governed by the usual parliamentary rules governing similar bodies.

It shall be the duty of the vice-president to perform the duties of the president in the latter's absence.

It shall be the duty of the secretary to keep a record of each meeting, and he shall also receive all moneys and pay them over to the treasurer, keep an account, make a full report at each annual meeting, conduct all necessary correspondence and transact such business as the Association may direct.

It shall be the duty of the treasurer to receive from the secretary all moneys belonging to this Association and give a receipt for them and keep an accurate account of them and pay out the same upon the order of the Association, signed by the president and countersigned by the secretary, and make a full report at each regular meeting.

ARTICLE VI.—Executive Committee.

SECTION 1. The Executive Committee shall be elected at each annual meeting and shall consist of one member from each of the following districts:

Eastern District—All territory in the United States, north of Maryland and east of Ohio.

Southern District—South of Maryland and Ohio River and east of Mississippi River.

Central District—North of Ohio River and between the Mississippi River and Pennsylvania.

Western District—West of the Mississippi River.

Canadian District—The Dominion of Canada.

SEC. 2. The officers of the Association shall be ex-officio members of the Executive Committee.

SEC. 3. It shall be the duty of the Executive Committee to fix the salaries and provide for the expenses, make the necessary arrangements

for all meetings, and perform such duties as may be necessary to further the objects of the Association.

SEC. 4. At any meeting of the committee, four members shall constitute a quorum.

ARTICLE VII.—Vacancies; Amendments.

SECTION 1. In case of death, or removal for any cause, of any officer of this Association, the vacancy may be filled by the Executive Committee until the next annual election.

This constitution may be altered or amended by a two-thirds vote of the members present at any annual meeting; written notice of proposed changes having been sent to the membership thirty days in advance of the meeting.

(Signed) H. B. SKEELE,
E. P. BACON,
F. K. IRVINE.

The changes in the Constitution and By-laws were adopted by sections and the text of the document stands corrected as printed here.

Mr. Squier: I move that the proceedings of this organization be published from time to time and copyrighted. (Carried.)

THE REPORT OF THE COMMITTEE ON RESOLUTIONS.

Whereas, The National Association of Manufacturers of Sand-Lime Products have met in annual session at Hotel Statler, Buffalo, and

Whereas, The hotel management have been kind in extending every courtesy to the officers and members of this Association, therefore,

Be It Resolved, That we extend a vote of thanks to said management and wish it continued prosperity.

Whereas, The officers of the Association and Executive Committee have been untiring in their efforts to make the Association a success, therefore,

Be It Resolved, That we extend them our hearty thanks and assure them of our appreciation of their work.

Whereas, All industries depend for their greatest success on the perpetuation and conservation of our natural resources, especially that of the timber and coal supply, therefore,

Be It Resolved, That this Association place itself on record as favoring the efforts being directed by the Forest Service of the Department of Agriculture in carrying out these important policies and that a copy of this resolution be mailed the Chief Forester.

Whereas, The amalgamation of associations as the association for industrial defense, composed of over two hundred state and national business associations is conducting a meritorious campaign to defeat unwise and un-American legislation that might tend to legalize the boycott, therefore,

Be It Resolved, That we show our appreciation by affiliating with this Association and render it our moral aid and support.

Whereas, There seems to be a need for a more systematic campaign in advertising sand-lime brick as an ideal building product and to provide a way of furnishing information to the members covering possible troubles peculiar to the manufacturing process, therefore,

Be It Resolved, That as an association and as members, we co-operate with a publicity committee in its efforts to carry out these policies and that the secretary of the Association keep a tabulated record of matters coming up from time to time that such matters may be convenient

for access to be used in answering inquirers relative to matters that may have been previously covered and satisfactorily solved.

Respectfully submitted,

(Signed) J. S. PALMER, Chairman,
W. J. CARMICHAEL,
W. H. CRUME.

A motion was moved and seconded that this report be adopted.
(Unanimously carried.)

THE REPORT OF THE COMMITTEE ON NOMINATIONS.

We, the Committee on Nominations, feeling that the past administration has been so eminently successful, believe that it would be a crime not to continue them in office and therefore herewith nominate,

S. O. Goho, President,
Wm. D. Schultz, Vice-President,
W. E. Plummer, Treasurer,
F. K. Irvine, Secretary.

EXECUTIVE COMMITTEE.

Eastern District, Mr. Loewenthal,
Southern District, Mr. Skeele,
Central District, Mr. Penfield,
Western District, Mr. Godart,
Canadian District, Mr. Allan.

Respectfully submitted,

(Signed) H. O. DUERR, Chairman,
W. J. CARMICHAEL,
W. R. STRONG.

A motion was made and seconded that this report be adopted.
(Carried unanimously.)

The President appointed the following Publicity Committee: J. S. Palmer, chairman, W. E. Plummer, F. K. Irvine, J. L. Jackson, and H. O. Duerr.

Mr. Skeele: I can not help thinking that we ought to have a committee appointed, called a Committee on Standardization, its office to be to come in contact with all members and see that the goods turned out are up to our standard and to be of help to them in accomplishing that fact. We say we make a certain standard and our Association is composed of members making standard goods. A man may get into a place where unreasonable pressure is brought to bear but if he can bring an official certificate of this committee that his product is all right, it might help a great deal in his individual fight. This might not only aid individual members, but aid the members of the committees in giving them something active and interesting to do for the Association. I just make this as a suggestion, and if it is worth anything hope you will act on it.

The President: I believe the question has merit, but it is too large to bring up at the closing hours of the convention. Personally, I feel like going slow and feeling our way on that proposition before we act.

Mr. Jackson: It is something for consideration.

Mr. Duerr: Why isn't that a good subject for the Executive Committee to go into and recommend at the next meeting.

Mr. Jackson: I make a motion that this suggestion be referred to the Executive Committee to report at our next annual meeting.

This motion was seconded and carried.

The President: I would suggest that before the body disperses that the Executive Committee have several matters they want to take up, that we meet before we go to the four corners of the continent.

Mr. Loewenthal: That was a point I wanted to raise.

Mr. Duerr: I move that the Executive Committee meet at the close of this session. (Carried.)

Mr. Penfield: I would like to have the Secretary compile a list of the members for the officers.

Mr. Irvine: Last year I had a letterhead and envelopes printed and furnished to each officer and each member of the Executive Committee. These letterheads bore the names of the officers and Executive Committee.

Mr. Duerr: I think that a very good idea to print letterheads with all the officers and Executive Committee's names.

Mr. Skeele: Wouldn't it be a good idea to print a leaflet with the names of members and officers.

The President: The Constitution and By-laws will be printed and the names of members can be attached to this.

Mr. Holden: A year ago a committee was appointed to wait on the government architect and I have never heard whether they succeeded in getting a hearing or if so the result of the hearing.

Mr. Duerr: I suppose I can make an informal report on that committee. We went to see the architect, Mr. Taylor, and practically ran up against a stone wall. He stated that while there were some very good sand-lime brick made, there were a great many that were very poor and up to the present time he did not feel that they were warranted in specifying sand-lime brick. We told him what we had done in the way of tests with the Underwriters' Laboratory and specifications, etc., and he then referred us to their engineer who does all their work in testing.

We had several meetings with their engineer and he took our copies of specifications, etc., and stated he would take it under advisement, consider it and report to Mr. Taylor. We never had any further information. Directly after the last meeting we had we were to have another meeting with him at his call, which he has never made. I wrote several letters but received no satisfactory replies as to when we would have a meeting, or whether he considered it necessary to have a meeting.

Unofficially, I received this information, that when the specifications of the American Society for Testing Materials was finally adopted, the government would adopt the same, so when the government adopts the last specification of the Society it will let sand-lime brick in under the requirements of that specification. The American Society for Testing Materials meets in June, 1910, at which the final adoption of the specifications is made.

The President: This applies only to the Treasury Department. The other departments are now using sand-lime brick. If there is nothing further to come up, I think we are in order for adjournment.

A motion was made and seconded and the convention adjourned.

THE BANQUET.

On the evening of December 6th, a subscription banquet was held in the private dining room of the Statler Hotel, at which every delegate of the convention was present and it was a most enjoyable affair.

H. O. Duerr, of Wilmington, Del., acted as toastmaster and he was in his element in this eminent position. He had a jab and a thrust for every speaker, and the responses were invariably in the same pleasant vein in which he called for the impromptu numbers around the banquet board. His victims were S. O. Goho, W. K. Squier, W. E. Plummer, F. K. Irvine, J. E. Ericson, L. W. Penfield, John L. Jackson and one or two others, for there seemed to be no limit either to the toastmaster's vocabulary or his wit.

There were plenty of good things to eat and it was a very enjoyable occasion, which many of the members insisted should hereafter be a feature of future conventions, as it has the effect of developing the social side along very pleasant lines.

PROCEEDINGS
OF
FIFTH ANNUAL CONVENTION
(Abridged Stenographic Report.)
OF THE
NATIONAL ASSOCIATION OF MANUFACTURERS
OF
SAND-LIME PRODUCTS

H. O. DUERR, President
FRED. K. IRVINE, Secretary

HELD AT THE
SHOREHAM HOTEL, WASHINGTON, D. C.
DECEMBER 15-16, 1908

THOSE WHO PARTICIPATED ACTIVELY IN THE
CONVENTION.

Hummelstonn Brownstone Co., Waltonville, Pa., R. J. Walton, Allen G. Walton and S. O. Goho.

Colorado Brick & Artificial Stone Co., Colorado Springs, Colo., Clark Mellen.

The Saginaw Sandstone Brick Co., Saginaw, Mich., John L. Jackson and John C. Reinke.

Dyett Sand-Lime Brick Co., 103 Park Ave., New York, N. Y., James R. Bateman and James H. Dyett.

Wilmington Granite Brick Co., Wilmington, N. C., F. H. Smith.

The Silicate Brick Co., Ltd., of Ottawa, Can., J. A. Bullman, Manager.

Savannah Brick Works, 18 East Bryan St., Savannah, Ga., H. B. Skeele.

Norton City Silica Brick Co., Norton, Va., E. G. Buck.

Tri-City Sand Stone Brick Co., Moline, Ill., John L. Jackson.

American Sand-Lime Brick Co., Chicago, Ill., W. C. Vanneman.

Eltweed Pomeroy, Millburn, N. J.

Penbuyn Brick Co., Bridgeton, N. J., E. P. Bacon.

The Sand-Lime Brick Co., Philadelphia, Pa., H. M. Lippincott.

Rockaway Brick Co., Rockaway, N. J., E. M. Lowenthal, Mgr.

E. W. Lazell, Philadelphia, Pa.

The American Clay Mchy. Co., Willoughby, Ohio, L. W. Penfield and W. J. Carmichael.

Buffalo Sandstone Brick Co., Buffalo, N. Y., W. E. Plummer, Jr.

Red Wing Brick Co., Red Wing, Minn., Jno. J. Bouy.

C. W. Lansing, Brick, Chicago, Ill.

Rochester Composite Brick Co., Rochester, N. Y., R. W. Holden.

Prof. Ira H. Woolson, New York, N. Y.

Seminole Pressed Brick Co., Jacksonville, Fla.

Berg Mach. Mfg. Co., Toronto, Can., A. Berg.

Lehigh Car Wheel & Axle Wks., Catasauqua, Pa., H. C. Shields.

Lehigh Granite Brick Co., Allentown, Pa., H. B. Weaver.

Wawasset Stone Co., Wilmington, Del., H. O. Duerr.

Composite Brick Co., Indianapolis, Ind., Wm. G. Beatty.

Fred K. Irvine, Rock Products, Chicago, Ill.

International Sand-Lime Brick Co., New York, N. Y., C. F. Kwaikowski and Franklin Henshaw.

Schultz Brothers, Brantford, Can., G. C. Schwitz, W. D. Schultz and J. A. Schultz.

FIFTH ANNUAL CONVENTION

National Association of Manufacturers of Sand-Lime Products.

December 15, 1908, 10 A. M.

President H. O. Duerr called the meeting to order at 10 a. m.

Secretary F. K. Irvine called the roll of the members in good standing and then called the roll of the delinquent members. Of the total membership of seventy, there were thirty-four delinquents at the time of closing the books, December 10th.

Mr. Jackson: I make a motion that the Secretary be instructed to make a three-day draft on the delinquents, and write them to that effect, and those that don't pay the draft be dropped from membership. Seconded by Mr. Smith. (Carried.)

PRESIDENT'S ADDRESS.

It gives me a great deal of pleasure to welcome the members. I always look forward to these meetings with a great deal of pleasure. I think the benefits that we receive from these meetings are so large in so many ways that we can not afford to miss them. While we seem to be a small happy family here this morning I think that by the time the meeting adjourns we will have a very good representative meeting, and although the number may be small, I feel we are of such caliber that we can make up in quality what we may lack in quantity by the work we accomplish. The atmosphere of the sand lime industry in individual cases seems to be one of "being downcast." But I don't feel we have a right to any such feeling in the industry. We have now something like 120 to 125 plants in this country and in Canada. There are that many in existence at the present time. There have been quite a few that have dropped out, but the condition of the industry today is much more healthful than it has been at any time since the inception of this work. The quality of material, the output, the condition of plants, everything, is better than it was a few years ago. There is no question about it, there have been quite a number of plants that have gone under; there was no excuse for their existing in the first place, and then again, a number of plants have gone under by reason of bad management. When it comes right down to a concrete fact, sand-lime brick is no different from any other manufacturing enterprise. You get good machinery and good management and you are going to have a good output and a good proposition, but if you ignore those facts you are not going to have a good proposition.

One criticism that I want to make—I think I have made it pretty nearly every year, and that is, that we are lacking in a spirit of work as far as the Association is concerned. You don't lack the spirit of work when you want to get a job; you go out after it; you know perfectly well that if you sit in the office and don't write any letters, and don't go to see

the architect or the contractor, that you are not going to get any orders; and consequently you hustle out for it; and the same thing applies if results are to be obtained in the Association. If you leave all the work to one or two men, those men may be energetic; but they can't accomplish everything; and they can't accomplish results unless they have your support; support in answering letters, making suggestions, etc. Every man needs some moral support, and he can't get it all within himself. And another thing—the association needs financial support. The association I feel has accomplished quite a little for its members, and those who have not been members, and that is one of our weaknesses. We have to do work for the whole art—we can not individualize. The work we accomplish is for the good of the whole business, and if there are men who are disposed to take advantage of that, we can not help it. We mustn't let it discourage us. We can not go on that basis. I think it is a well established fact that associations wherever formed and in whatever business have been for the good of that business. It is also a well known fact that it usually comes down to one or two men doing the majority of work, but one or two mustn't do all the work. The Secretary has done excellent work and worked hard, but the results have been discouraging in getting any co-operation whatever. We have undertaken a piece of work this year which was brought up at the last convention, which I think you will find of inestimable value to the Association and to the business as a whole. This work has cost the Association considerable money and it must have the support of the members to take care of this expense in order that this Association shall have a proper kind of a standing. If we have no respect for ourselves, we can not expect others to respect us and this Association represents a business—the business is getting to be larger, but we want people to feel that we are something and that we are somebody; not that we are indifferent to our business and to our product and to our finances. There is I believe in the neighborhood of four to five million dollars invested in the United States alone in the sand-lime industry and we are getting to be a recognized factor. We must compel the people, the builders, the architects, and the owners, to feel that we are a factor to be recognized and reckoned with. The only way we can do that is to conduct our business and our Association with dignity and with energy. I feel that the Association is to be congratulated in taking in quite a number of new members and I believe that the concerns that are coming in are coming in in the right way. They are going in the business with the right understanding. They recognize that there have been failures; they have sifted out and have made up their minds not to be the same failures but to be successes, and I think that every new man we get from now on will be an added strength in every respect to the industry, because these men will go in to make a good product and to make a success, and I think it means a success for the Association as well.

I have but one more suggestion to make and that is in the personal line and that is that I feel that I have been a failure as President of this Association because I have not accomplished anywhere near what we should have accomplished because I haven't gotten the interest of the members; consequently I feel we need some new blood and some new energy and I want every member of this Association to get in touch with every other member and size him up and pick out the best man we have here and see if we can't whoop the members of this Association up and get results, because that is what we want. We are all after the same idea and we want the man that is going to give it to us; a man that has the confidence of the members to the extent that when he writes a letter to the members, he will get some replies.

THE SECRETARY'S REPORT.

The past year has been one of singular difficulties to all producers and handlers of building materials and especially has this been true of the sand-lime brick industry. Probably fewer plants have run continuously all through the season this year than ever before since they were built. In spite of this, most of the manufacturers have succeeded in marketing their products and the statistics of the building operations of the country now show that, had the manufacturers provided themselves early with a large stock of good brick, in all probability it would have been sold at some price or another, for actual building this year in many sections is greatly in excess of any former building season.

This Association has undertaken a great deal of valuable and expensive scientific research work and for that reason we have needed money all the year. With a total membership of fifty, making the total possible collections for dues only \$500.00 and less than half of this in hand at the middle of the year, the progress of the work on the secretary's desk was largely impeded, indeed for a while it was completely blocked off.

When I took up my work there was a deficit amounting to about \$600.00 and not a cent in the treasury. The work in connection with the Underwriters' Laboratories has cost \$750.00 more, and a considerable portion of this remains yet to be provided for. Current bills have been met with the income of the Association and not a single unnecessary cent has been expended. The total outstanding accounts of every character at the present time is \$1,494.65. There is quite a substantial balance of cash in the treasury as you will hear in the treasurer's report a little later. \$180 of the past year's dues are still unpaid and can soon be made available by the action of this meeting. These two items with \$40 already collected on the new year's business will amount to fully \$300. With fifty members, provided the dues are promptly paid up, \$500 more will bring the Association to exactly the same financial status as one year ago—namely, confronted with a deficit of \$600 or \$700.

The Association still has a number of the advertising booklets and about 100 copies of the proceedings of the first three conventions of the association. The sale of this association literature has about reached its limit, for the reason that practically every party interested has been supplied.

Owing to the lack of funds your officers decided that it would be impossible to take up the publication of the proceedings of the Columbus Convention. Most of the members consider that this publication should be sent to them free of charge as a return for their dues and while possibly fifty copies of these proceedings could have been sold at \$3.00 a copy, this would not be more than half enough money to produce a 250 page book bound part in cloth and part in paper, as the former proceedings have been issued. Several copies of the last volume published by this association, being the proceedings of the meeting held at Chicago in 1906, have been returned by parties who would have bought such proceedings had they been of the same size as the book containing the proceedings of the Detroit convention. This objection for the most part came from librarians who insist that technical literature of this kind shall be bound in such a form as to go on their shelves consecutively.

The secretary has in his possession the stenographic report of the Columbus convention, and if it is the pleasure of this body that the book be printed it can easily be done.

Later in the proceedings the secretary will ask for your instructions with regard to this as well as the publication of the proceedings of the present convention.

Early in February your committee, appointed to co-operate with the Underwriters' Laboratories in Chicago in the matter of comparative

tests, were in attendance and the tests were completed within a few days. Not until after the first of August was the official report of the Underwriters' Laboratories in hand. There was great concentration of attention and interest in this important report and many members were inclined to be impatient at the delays. Every endeavor was used to expedite the matter and as soon as the report came to hand there was a meeting of a capable joint committee, the deliberations and results of which will come later on the program of this convention. Your officers then decided that it was too late to publish this report in pamphlet form together with their recommendations and the whole matter was postponed for the consideration of the committee of the whole at this convention.

I will say that my relations with all of the officers and members of the Association have been very courteous and pleasant and I hope that the great work that has been carried forward under the difficulty of lack of financial resources will result in ultimate good to the whole industry for which it was designed and well nigh completed.

I hope that you will succeed in erecting and adopting a standard for sand-lime brick which will give it an unquestioned place in the most exclusive markets and I believe that this can be done with the active assistance of all of the intelligent manufacturers and scientific experts in this assembly.

In retiring from the work as secretary, I will say that my confidence in the sand-lime brick which will give it an unquestioned place in the most exclusive markets and I believe that this can be done with the active assistance of all of the intelligent manufacturers and scientific experts in this assembly.

The report was adopted.

The President: The Treasurer, I presume, has missed connections. He will be here before the meeting is over, so we will leave the matter of the Treasurer's report until later, if there are no objections.

The Secretary: I have prepared here three exhibits giving full details, with the original entries and documentary evidence of my stewardship, which I would like to have referred to an Auditing Committee, so as to receive their O. K. on the same.

The President: I will appoint Mr. Penfield, Mr. Goho and Mr. Lippincott to audit the papers of the Secretary.

Last year we thought we could put a little more life into the Association by appointing an officer for each of the four districts of the country to get in touch with the plants in their various sections. The feeling was that the membership was badly scattered and we felt that if we had some one in closer touch with the immediate plants, that we might get more effective work. The committee appointed consisted of Eastern District, Mr. Squier; Southern District, Mr. Smith; Central District, Mr. Jackson; Western District, Mr. Mellen. We will now hear their reports.

Mr. Smith: I haven't any regular report to make. I received possibly ten per cent replies to letters I wrote.

Mr. Jackson: When this recommendation was made about a year ago appointing a committee to take up this matter, I thought it was a very good suggestion and I felt something as Mr. Smith did. After I

got home I wrote a letter to the different members of the Association and those that were not members, and asked them what they thought of the advisability of holding a meeting in our territory. I got a few more replies that Mr. Smith did, but they were not of an encouraging nature. A short time after I got back from Europe, before we had our meeting with the Underwriters' Committee, I wrote again saying I thought we would have a report from the Underwriters which would be of some assistance, and I did not get as many replies, and then before we had our meeting here, probably ten days ago, I wrote about seventy letters, and I got about fifteen replies. Most of the people from the West thought it was too far to come East; they thought the Convention should hold the meeting in the West. I question very much if you could get Eastern people to go West. I think the proper thing would be to hold our meetings as near the center of the United States as possible. When the insurance people took the stand they did; the arbitrary position of not allowing our brick to go into buildings unless they were discriminated against; if that had been allowed it would have closed every sand-lime factory in the United States. But your Secretary and President and Committee met the insurance men and we were treated fair. It was a new thing to them; they had to take some kind of a position or stand; they didn't know what rules they ought in justice to make, and your committee and their committee had meetings. We formulated a new set of rules. The tests were made; they were unsatisfactory and we were disappointed and so were they; although we were better satisfied with sand-lime than they were with clay brick. We had another meeting in New York in the fall and went over the matter there. We formulated a new set of rules there and it was submitted. The committee worked hard. But I feel we ought to have the support of every individual manufacturer of sand-lime brick and every machine man if he is going to sell any more machinery to create new factories and get new factories started.

I make a motion that the President appoint a committee of five gentlemen to take up the matter of our finances. It is quite a knotty problem, and let that committee report in the morning what they want to do to help us out. We can't let this thing go on if the Underwriters' Committee feel that we don't pay. They will discriminate against us and it will hurt everything. I feel we must all work together; everybody's help is imperative, and everybody must help his neighbors. Because one of my factories is running alright, it is no sign that my neighbor shouldn't be alright. I would ask the President to appoint five of as good men as he can pick out among the members present.

Mr. Carmichael: I second Mr. Jackson's motion.

The President: The motion was seconded and carried. I will appoint Mr. Buck, Mr. Jackson, Mr. Penfield, Mr. Goho and Mr. Bacon.

Mr. Mellen: By some mistake of the mails I failed to receive my notification that I was appointed district manager of the Western territory, and I don't know that I would have been much more successful if I had. I have had gentlemen write me from various parts of the country,

from people intending to put up plants, and people intending to modify their plants. They have dropped in to see my plant and I have always been pleased to take them over and show it to them. I have had people from Florida and other points of the compass come to see me, but they were just visitors and I have given them all the help I could. That is about all I can say about my district, which is not very much.

The President: I see by the program that members are requested to commit to writing such special questions as they desire to have brought before the Convention for consideration, and to hand same to the Secretary, marked "Question Box," during the recess for luncheon. In connection with this, let me suggest that the value of our Convention is in discussion; also in getting together between sessions. There are a great many men who don't feel disposed to get up in a convention; let him forget it. I don't think there is any man if he has a vital point that interests him, who can't get up and talk as well as any other man. We are just a healthy family and are not here to criticize individuals. We are here to learn. Don't let anybody hesitate to get up and say what he wants to say and ask any questions he wants to ask, and let us get just as much benefit from the meetings as we can. If any are bashful and want matters brought out, let them put it in the shape of writing. There is nothing more that I know of that is on the program for the morning session. The afternoon session will start at 2:00 o'clock with a paper by Mr. Jackson. In the meantime, are there any questions we want to take up now.

Mr. Goho: I have a suggestion that I would like to make. That is, that the committee you have asked to look after the deficiency of this Association should have a wider authority. One of the most valuable things that the Association gives to its members is a published report of the meeting. We have there in cold type the experiences of the various men who are manufacturing the product, and also of the men who are manufacturing plants, and it is quite a different thing to hear those things stated in meetings and having a published report, studying it coldly and seeing just how much it means, and I think that this committee, while it is looking after the deficiency in the treasury, should also consider ways and means to see that the proceedings of the Columbus Convention and the proceedings of this Convention are published, and I move that this committee consider ways and means of publishing the proceedings of both conventions.

Mr. Skeele: Mr. President, as a new member I hesitate some to make a suggestion. Nothing so lubricates the wheels of progress as a steady financial condition in any kind of enterprise. I have been a member of other conventions and societies and it has always seemed to me that the expenses necessarily attendant on these conventions are too apt to be regarded as personal expenses somewhat in the nature of a junket, but if we would consider them as business expenses and charge to operating accounts, I think there will be no money better expended than the money needed to carry out the purposes of this Convention. Therefore,

it seems to me an assessment should be levied upon every member in good standing upon his business charged by him to operating expenses, and it might be arranged by the Secretary receiving a report from each member of the number of brick made and on the basis of that report charge out these expenses pro rata to each member.

Mr. President: As far as this Association is concerned, they have never held back. They have come to the front every time with encouragement in every direction and in every sense of the word. I don't think we need to worry very much about that. I think that Mr. Skeele's thought is a very good one. Perhaps we have taken this whole proposition too lightly. Perhaps we have taken it in the sense of personal expenditure and haven't given it business-like consideration. There is an old saying that experience that costs us nothing is of no value. Perhaps the Association has held itself too cheaply. It has given a whole lot and it has gotten very little in return, and if the members of the Association felt that they had an expenditure that was going into their manufacturing companies that was helping those manufacturing companies, I think we would recognize the Association as being more of a factor.

Mr. Buck: It seems that a good many members regard this as a social meeting. Brick manufacture is still in its early stages, and we need this Convention to gain by the experience of each other. There has been a committee to confer with the Underwriters. I expected that we would be assessed then \$15 or \$20 each to pay the expenses of it, and I think every man would have expected the same. Nobody would expect four or five men to go out to Chicago, employ experts, and pay it out of their own pockets, and we should expect to pay for this service, and to pay for it promptly.

Mr. Lowenthal: I believe that the information we receive at these meetings is worth money to anyone who attends. I don't believe there is anyone who comes here who knows it all; I mean, that has got his plant in such perfect condition that he can't get some information from other members.

The President: You heard the motion of Mr. Goho. The motion is that the powers of your committee be enlarged to consider ways and means and report back to the Association in regard to printing reports of this meeting and the meeting at Columbus.

(The motion was seconded and carried.)

The President: Mr. Jackson will now address us on "Observation of the Progress of the Industry in Europe."

Mr. Jackson: My paper does not cover exactly the points I was supposed to bring out, but I think it will cover some of the new things I found in Europe on my last trip.

OBSERVATION OF THE PROGRESS OF THE INDUSTRY IN EUROPE.

BY JOHN L. JACKSON.

Months before my trip, I corresponded with United States Consul General A. W. Thackara, at Berlin, in order to be put in touch with such parties as might be able to give me the desired information by correspondence, and save a lot of time and annoyance when ready to begin my investigation.

I did not go to Europe for the purpose of obtaining information pertaining to our industry; I went to get a much needed rest, see what chance there was for selling furniture, from two factories in which I am interested, look up the producer gas industry for power purposes in making gas from bituminous coal, the handling of waste from beet sugar factories, by pressing, drying and bagging so that the pulp can be sold to the consumer at some distance from the factories, which can not be done with the wet pulp, and find what was being done regarding the use and manufacture of denatured alcohol from by-products, but I did not forget our industry, as I had my route laid out and did not lose any time by having to go over the same territory twice. I arrived at Berlin about the middle of March and spent some time at the United States Consul's office, getting letters of introduction to the parties I wished to call upon and to find the best and shortest way of reaching them. I then called at the headquarters of the Society of Lime Stone Factories, met their representative, who gave me some information, referred me to manufacturers of sandstone brick and gave me letters of introduction to those whom he thought could give me the information I was seeking.

I find that the industry is steadily growing, with a gain of over fifty factories in Germany during the year 1907, notwithstanding a strike which lasted almost during the entire building season and tied up all the work under way. Berlin has more than twenty factories for making sandstone brick, which can produce over three hundred million brick per year. One factory has a capacity of one and a half million per week with eighteen presses, and is said to be the largest sandstone brick plant in the world. Berlin uses over five hundred million brick per year, which are divided between the manufactures of clay and sandstone brick. It is not a question of quality, but a question of price delivered on the job. The delivered price varies from \$4.75 to \$6.50 per thousand and it costs from 75 cents to \$1.00 per thousand to deliver. The quality of the brick is very poor and would not be accepted in this country, but as all exposed parts are given a coat of cement to imitate stone work, it does not make any difference in this market, which is not the case in some of the other places I visited, where the brick must have sharp corners and be perfect or they will not be accepted by the architects and on government work. Some of the manufacturers reported they were making money, even at the prevailing low prices, and others were not running and did not intend doing so until the brick on hand were used up and prices were advanced. Some of the factories I visited I believe, were doing well or even better than they represented, as the brick were taken direct from the factory every day. They had no brick on hand and were making about 100,000 per day, running day and night shifts. One of the managers showed me his daily and weekly cost sheet, also receipts for the brick sold, which netted their company a profit better than \$1.25 per thousand, after deducting overhead expense, depreciation, etc. They had an exceptionally well arranged plant with four presses and eight kettles or hardening cylinders, with a capacity of 100,000 or more each day of ten hours, but were running only two of the presses and all the kettles, day and night shifts, ten hours each, alternating the crews each week. The managers claimed

they saved at least 25 cents per thousand on labor and as much more on fuel over running the entire plant day time only, and got more capacity, as the different crews were trying to make as good a showing as possible.

I will give you the cost of the brick from one of the plants located a short distance from Berlin. The German standard brick is larger than ours or the Philadelphia size, and contains about 40 per cent more material, and is about 50 per cent heavier.

425 pounds of coal at 25½ cents per hundredweight, costs per thousand	\$1.09
430 pounds of lime at 22½ cents per hundredweight, costs per thousand . . . . .	.97
Labor, including superintendent, costs per thousand . . . . .	.75
Repairs and improvements cost per thousand . . . . .	.39
Factory and overhead expense costs per thousand . . . . .	.17
Insurance, depreciation, office, sales expense, taxes, etc., per thousand	1.40
Total cost of brick per thousand on wagon or in yard	\$4.41

In this factory their common labor was figured at 80 cents per day. In most of the plants I visited the wages were somewhat higher, running from 80 cents to \$1.05 per day of ten hours. One thing I noticed, that the help worked much harder and the factory was run with less help than we use here. Cost of lime and fuel varied also, but I find where lime was higher, the fuel was invariably lower, so these two items did not change much in the different plants. The most difference was in the operating expense or labor and cost of maintenance. One factory I visited near Berlin was making about 60,000 brick per day, twenty hours, with fifty-one to fifty-four men on their pay-roll. Another factory in Berlin, making from 100,000 to 104,000 brick per day, twenty hours, had the same number of hands on their pay roll, and made a much better quality of brick. I also found a vast difference in the cost of repairs or maintenance in the different plants I visited. Some of the managers claimed that this item was less than 20 cents per thousand and others as high as \$1.60 per thousand. One plant in Berlin was changing its system and machinery on account of the excessive cost of maintenance or repair account. They claimed they had machinery enough to equip four factories and altogether too much to keep up.

A plant I visited at Kiel on my second trip to Europe and again on this trip had made such a success of their business that they were unable to supply the demand for brick, notwithstanding they had doubled their capacity; three other plants had been built in three years and another was just being installed. The owner of the first Kiel plant said his brick cost him, for factory expense, less than \$2.75 in 1905 and about \$2.75 in 1906. He figured his labor at \$1.10 to \$1.15 per day of ten hours. His cost includes all factory expense, such as labor, fuel, lime, repairs, taxes and expense in connection with the factory, but does not include office or sales expense. He was very well pleased with his business. Before taking it up he was a large contractor, at which time he did all he could to keep the brick from getting into the market. The plant to which I referred in Berlin, making from 100,000 to 104,000 brick per day with fifty-two to fifty-four men, had been in continuous operation over two years and had a system different from any I had seen on my previous trips. The sand, which was clean and of a fine texture, was taken into the factory from the bank or pit in dump cars holding about one and one-half yards each; the lime was ground and stored in an air-tight metal tank about 7 feet in diameter, 12 feet high, taper bottom, supported on posts or columns; the ground or unhydrated lime was weighed and run into a specially prepared car and hydrated as it was being mixed in the

following manner: One car of the sand was dumped into a drum 6 feet 6 inches in diameter, cone-shaped ends, about 15 feet long, running on bearings from the ends, provided with suitable manholes. After this car of sand, the car of lime was dumped into the drum, and on top of this another car of sand, and the manhole was closed; the drum revolved, adding steam from 30 pounds to 40 pounds pressure and additional water when necessary. The steam pressure was allowed to remain for about 20 minutes, the drum to run 30 to 40 minutes, then two more cars of sand were added and the drum allowed to run 15 or 20 minutes longer, taking about an hour to hydrate and mix enough material to supply two presses; the material was then elevated to a dry pan, where it was again mixed as required before going to the presses. This system was not recommended, however, in plants having less than two presses, or making less than 40,000 brick per day of ten hours. In another plant they took their sand from the pit on dump cars, elevated it to the second story, where it was screened, removing the coarser material, then carried to a metal storage bin about 8 feet in diameter, 16 feet high, taper bottom, supported on columns. The lime was ground and put into the bin with the sand and enough water added to hydrate the lime, by allowing the mixture to stand from four to six hours. As it was required it was drawn from the bottom of the bin, put through a dry pan, adding dry material if too wet and water if too dry for the presses. I learned that a number of plants which formerly had used the silo system had changed to this plan or system, and were well satisfied with the results obtained.

In delivering the brick from the factories to the jobs, in most cases they are handled about as we are handling them in this country. One factory I visited, located on the Canal, with good wagon roads, and delivering the brick in Berlin, piled the brick from the presses on a U-shaped platform, holding about 800 bricks; after hardening, two of the platforms were loaded on a wagon, hauled to the buildings, hoisted with derrick and dumped where wanted without handling the brick. On another job, the hardening cars were run on a wagon provided with tracks to receive them, hauled to the building and hoisted or run up on a lift and the brick unloaded from the cars as required.

I was well pleased with the treatment I received from the managers of the different plants I visited; in only one instance was I refused admittance, but succeeded in getting into the plant after getting the right combination. I feel that I was well repaid for the time and money spent and am glad I do not feel as a manufacturer of our industry here, that the "Dutchman" can not teach us Americans anything new. I would advise any member of our Association to take a trip and spend the time to investigate, and I assure him he will not regret doing so. I have copies of tests made, with mortars on clay and sand-lime brick, at the Royal Testing Station of the School of Technology in Berlin, which I have translated and have with me. I believe it would be a good plan to have some of these printed and distributed to the members of our association, to give or show to masons, contractors and architects who object to the use of our brick on account of the mortar not adhering to them as to clay brick.

Before closing I would like to call the attention of the members of our association to the condition of our sister association in Germany. They have elected their officers from representatives of machinery companies and engineers who represent one particular kind of machinery and system, which is causing a great deal of dissatisfaction and a number of withdrawals from their association. There is some talk of organizing another association. I would suggest that in electing our officers we endeavor to choose such men as will be fair to all the different systems and machinery. We are organized for our mutual protection and I believe we should work together.

Mr. Buck: Is the system that you describe, hydrating lime in a closed cylinder, the same as the Olemacher system? He had a patent at one time for hydrating sand and lime together in a cylinder.

Mr. Jackson: There are several manufacturers in Germany using this system. I understand it is not patented.

Mr. Penfield: Isn't that practically the same scheme that has been used in the Rochester plant? The Rochester plant used a steam cylinder for hydrating the lime alone. They used no sand.

Mr. Jackson: They have been doing that in Europe for a long time; hydrating in that way, but this hydrating of lime and sand and mixing at once is the first time I have seen it.

Mr. Bovy: What advantages do you claim for this system over the Silo system we employ?

Mr. Jackson: It is a continuous operation; the sand is taken up in the cars; dumped into the hydrator or cylinder with the lime and you don't have to wait for the preparation of material, and there is no danger in case anything happens to your plant of having a lot of material on hand. That seems to be the most successful way of running a plant over there.

Mr. Buck: Olemacher claims that a slow hydrating lime will hydrate better in a closed cylinder than in an open silo.

Mr. Carmichael: Mr. Jackson, did you get any relative tests on brick made by this process you mention and the other brick.

Mr. Jackson: You might get it by writing to the association in Berlin. I didn't look that matter up.

Mr. Mellen: Mr. Jackson, did you see any signs of lime in white particles in the brick?

Mr. Jackson: Oh, yes, considerable around Berlin. A good deal of it is very poor brick, but it is covered by a cement covering. Berlin is one of the cleanest cities in the world. If they find a house at all dirty they have it washed and coated with cement. Berlin is not a manufacturing city. All manufacturing is done outside.

Mr. Bovy: Do you suppose that the additional amount of labor involved in that process would pay in America? You understand labor is very different. It appears to me that the additional amount of labor involved would more than offset any other saving that you could gain by it.

Mr. Duerr: Is there any additional labor involved?

Mr. Jackson: They claim they get along with less labor. They make from 100,000 to 104,000 brick every twenty hours with fifty to fifty-four men.

Mr. Buck: These figures taken from German factories are misleading. When you come to consider the fact that these brick are fifty per cent heavier than ours and that the labor is perhaps secured at fifty per cent less than ours, and the further fact that the German laborer in ten hours will produce fifty per cent more work than our men, you will see that the figures of cost are very misleading. All that we can get from your report is the quality of the product, because I know personally

that those men can do fifty per cent more work than our men here. The question of cost does not enlighten us much. It is only a question of the quality of the product.

Mr. Jackson: I found the best they were doing was 1,800 brick per man. They had less men around the factory. We have to have two men where they have one man. Their brick runs seven and a half to eight pounds where ours run five pounds. Their labor is seventy-five cents. Our labor runs from \$1.80 to \$2.00 per thousand. The lime in this country is somewhat cheaper and the fuel somewhat cheaper.

Mr. Duerr: In that section of Germany, were they able to make those bricks without any grinding?

Mr. Jackson: Yes, they get a fine sand. The manufacturer I spoke of at Kiel will give any of you gentlemen any information you may want. He has doubled the capacity of his plant and he had nothing but the kindest words to say for the industry, and his brick is shipped by canal and boat to Holland. They are making a perfect brick with sharp corners. They screen out their coarse material and it goes through the dry pan, which crushes the coarser stuff and makes a good sharp cornered brick. They put it through a twenty-eight or thirty mesh screen. I don't believe any of it would go through a 100 mesh screen, but the coarser is crushed up and mixed in with the other. The dry pan does some grinding, but they don't grind it fine. I mean by dry pan a pan with screen bottom with very small openings.

Mr. Penfield: It occurred to me from Mr. Jackson's paper that judging from the factories he referred to, that there is one lesson he would teach the manufacturers of this country; that is, the capacity the plant ought to have. I had an impression they had a total capacity of 50,000 for a ten hours run and in this country 14,000 to 18,000 capacity is the average, and that may be one of the elements that has contributed to many of the failures in this country. I don't think we ought to put too much stress on what is being done in Germany, particularly in quality, because the conditions are so different. I have found that many architects condemn a brick if they can unravel it. That is due to coarse material in the brick, and we in a good many sections would be up against it trying to sell a brick of that kind.

Mr. Duerr: Mr. Penfield's remarks on capacity are unquestionably the keynote of the situation in this country to a large extent. There are very few small plants, as I size up the situation, that are so situated that they can sell their output at a price that will make them a profit unless they have good capacity. There are very few plants that can sell all their output of first-class face brick, because there isn't sufficient demand. The consequence is the plant has either got to have one or two conditions. It has got to have an output that will enable them to make the brick cheap enough. If you are going to sell in competition with high-class brick you can not make an inferior brick as to face and edges. Personally, I don't advocate an inferior brick, because it seems to me we can make by care a better brick than any clay brick we ever came up against.

Mr. Jackson: I want to say a few words in answer to Mr. Penfield. In 1904 we made over 5,000,000 brick. Our average was about 19,000 a day of ten hours. Our labor that year was \$2.16 per thousand. The labor conditions then were better than this year. By increasing our daily output to over 20,000 we immediately cut down the labor. That item of labor we want to get after now. We have cut all our other expenses down as low as we can get them. In 1904 our labor was \$2.16. Last year, with four million and a quarter brick made twenty cents less, about 21,400 per day. The last year labor was higher. The more you can get out per day with the same number of hands, the less it will cost you per thousand.

The President: I desire to appoint the following Committee on Nominations: Messrs. Smith, Bovy and Mellen. And the following Committee on Resolutions: Messrs. Plummer, Skeeel and Lowenthal.

Adjourned to 2:30 p. m.

December 15, 1908, 2:30 P. M.

The President: Is the Financial Committee ready to report?

Mr. Buck: We are, Mr. President. Your committee recommends that an assessment of \$15 be levied upon the members of the Association and that the by-laws of the Association be amended to make the annual dues \$25.00 per year with an initiation fee of \$25.00.

Mr. President: For the information of those members that don't know, I would say that the latter part of this recommendation is simply intended to be voted upon and put up to the Association at the next annual meeting. Under our Constitution and By-laws any changes in the By-laws must be made by notice of ninety days to the members before a regular meeting; therefore we can not do anything more than merely recommend that and place it on record so that the Secretary will act accordingly.

The deficiency of this Association is almost entirely due to expenses incurred in connection with the work with the Underwriters. It was decided by the Association at the last meeting that it was essential that this be done. The attitude of the Underwriters toward sand-lime brick was a position that was not tenable for one minute. At the same time they said, "We're from Missouri. You have to show us." At the meeting last year I told the Association in plain, good English that it would cost us in the neighborhood of \$800, and that is about what the expense has been. We are in arrears \$500. Adding that arrears to the expense of having the Underwriters make comparative tests, the cost makes our total indebtedness \$1,400. We have got to take care of that some way and the Finance Committee which was appointed this morning has gone into it thoroughly and their conclusions were that the way in which to make good is by making this assessment of \$15. Now, those in favor of this motion will kindly signify Yes or No as his name is called. (The Secretary wrote down the names of every member present and his vote. The motion was unanimously carried.)

The Secretary will be instructed to notify the members ninety days before the next meeting about the contemplated change in the by-laws.

Mr. Plummer: I move that the Secretary notify all members of the Association of the action of the Association at this meeting relative to the assessment, giving the reason for it, with a concise financial report, and the number of votes unanimously cast. (Seconded by Mr. Jackson, the motion was carried.)

EXPERIENCE—WHAT HAS IT TAUGHT US:

BY W. J. CARMICHAEL.

Patrick Henry once said, "I have but one lamp by which my feet are guided and that is the lamp of experience."

To most men experience is the guiding star which forges them into successful combat with difficulties encountered and through it have come the masterpieces of art, the discoveries of science, and the present day success of the properly equipped sand-lime brick factory.

Some years ago Dr. Michaelis of Germany, through a series of experiments, discovered the possibility of bonding together under steam pressure silica sand and lime. The result of the work of this experienced mind was the patenting of this process, which patent he allowed to expire, thus giving the public every right to its use. Soon after the new system of brick manufacture became known, a number of patents bearing directly or indirectly upon the sand-lime brick industry were granted, but few indeed have proven of real merit.

There is no patented process of hardening brick in the ordinary way with steam under pressure, nor can there ever be owing to reasons as stated. Further, it has been demonstrated that if it were possible to increase the strength of the bond in sand-lime brick by the use of patented processes of hardening, it would render the cost of manufacture excessive, prohibiting any possible consideration by the commercial brick maker.

If you will look carefully over the field of experiments you can not help but note that, as a rule, each individual manufacturer faced his particular problem, single handed, rounding out an improvement in his factory which was eventually incorporated in the plans offered the trade by the manufacture of sand-lime brick machinery, the brick maker thereby becoming the real factor in bringing about a system which has placed sand-lime brick produced in the United States in a class superior to that of any other country, while the machinery manufacturer has every right to claim his share of the success, for he has not only increased the efficiency of his machine at heavy expense but has kept in close touch with every improvement brought out in each individual factory to the benefit of those now contemplating the manufacture of brick.

We are often amused to note in the trade papers patents granted for certain processes or systems which some bright mind has conceived, for in the very great majority of cases such ideas have been brought forth by the hard work of some unfortunate brick maker who has been guaranteed certain capacities, etc., which the so-called expert process or system engineer could not himself produce. For instance, cases have been known where a capacity of 40,000 brick per day was guaranteed with grinding, drying and mixing machinery for only 15,000 brick furnished. The only solution offered was the mixing of an unground sand with the ground sand and lime in proportion to increase the output of the factory to a commercial possibility, the result of such unusual chance bringing forth the fact that a better brick in absorption, looks, crushing strength and at a more economical cost price could be produced than where both sand and lime were ground finely together or where a mixture was made without grinding. We all enthuse over the discovery of a process which has been tried out, and are willing to pay for the advantages by such process, but where we find promoters tempting our fellow men with glowing accounts of certain secrets which they never intend to put in operation in the factory, we should feel free to counteract such misrepresentations for the benefit of those seeking to engage in a legitimate business.

I am of the opinion that the manufacturer of sand-lime brick has at last reached the point where he need not fear the possibility of not pro-

ducing a first class article and as was found necessary in all developments of the clay brick industry, we have had the great assistance of good, practical men of science in the different lines, the machinery manufacturer and the cool-headed, patient, untiring inventors and his assistants.

Let us glance for a moment at a comparison of the troubles of the sand-lime brick maker and his near neighbor, the clay brick maker. In the early stages of clay brick manufacture it was necessary for the operator to select clay adapted to the making of brick by the hand soft mud process. This work he accomplished after examining different locations and securing the assistance of such help as he could gather together. After his brick were made and the weather had permitted him to place the same in position for burning, he depended almost entirely upon the weather conditions and the result of his firing judgment. Often a complete kiln would be condemned to the rubbish heap, not because the material at hand was faulty, but because the experience had been lacking. It is not an uncommon occurrence to see some brick totally disintegrated by the action of the elements while others taken from the same kiln withstood climatic changes most successfully.

The existing conditions and the rapid expansion of the country demanded not only a better product but a larger capacity. Therefore, the horsepower machine superseded the hand process and finally the steam operated stiff mud and dry pressed brick machines were brought to their present day development, not, however, before enormous expense had been incurred in testing out clays adapted to the different processes and machinery.

We think of the troubles encountered in the manufacture of sand-lime brick, but if we review the clay brick situation we find it has been fraught with many trying problems as it was gradually developed. When the auger machine was invented and placed in operation troubles of lamination, warping and checking were encountered and it became necessary to readjust the machines and augers to overcome these very objectionable features.

It has taken years of hard work and an expenditure of immense sums of money to bring about the present day perfected stiff mud brick. We talk of disintegration, and I can not help but believe that the up-to-date methods of testing materials have been the outgrowth of experience gained through the disintegration and scaling of layers of poorly made laminated brick and the placing on the market of underburned and improperly made clay brick. Hence, we must conclude that again the materials were not so much at fault as the lack of experience on the part of the operator.

After the different clay processes have been successfully carried on to the complete satisfaction of architects, contractors, the government and all classes of people, then a dry press process of manufacture in which ground clay containing but a small percentage of moisture was pressed in brick form by a machine designed to exert sufficient pressure to bond together the particles of ground or pulverized clay. Much skepticism was immediately aroused regarding the possibility of its weathering without disintegration owing to the manner in which it was made and because it was not first pugged to the consistency of mud. However, with aid of machinery manufacturer and the experience gained by actual practice, dry press brick today ranks with the best of building materials, both in durability and beauty of finish.

In the earlier stages of brick making it was practically unknown to manufacture brick from the different shales deposited throughout the country, yet today experience has taught us that shales are most excellent for the production of all building materials. They are also suitable to enter into the manufacture of by far the best street paving blocks known. Knowing therefore as we do the advances made in the brick industry we are now in position to state frankly that we, as sand-lime brick manufacturers,

have overcome the greatest of our difficulties and have given to the trade a building material far superior to that which the clay brick manufacturer would have the public believe.

Instead of crying down our product it would be a wise move for our clay brick friends and ourselves to get together upon a working basis in convention and otherwise join our efforts in promoting the uses of brick, whether manufactured by the dry press, stiff mud, soft mud or other processes now in general use. The result would be a benefit to all parties interested, especially at this time when our friendly competitor, the cement manufacturer, terms this "The Cement Age."

We should jointly face the problem of economizing, especially in the placing of brick in the wall, the adjustment of differences between the contractor and the brick layer and the possibility of bringing to the notice of the brick laying fraternity the necessity of regulation to meet the open competition of re-inforced concrete and other building materials. True, there is some agitation already started and investigation is being made tending to the economy and speed of the building of brick work, but what we need most is the intelligent, fair-minded mechanic who can and will do a day's work without having a chip on his shoulder and who is not afraid to encourage the apprentice in his class of work. The brick layer of today is beginning to face a position which he himself has brought about; for instance, the architect, contractor and builder, when faced with what they consider unjust regulation, have only to advise the brick layer that unless his proposition is given more consideration the structure will go up as a reinforced concrete building. It behooves us then to consider our relation with the man on the wall and his connection with builders and architects, whose interests are so closely allied to our own.

The manufacture of sand-lime brick has often been viewed as a strictly face brick proposition, owing, perhaps, to the nicety of its appearance, the perfection of samples submitted and from the fact that many of the early organized companies were burdened by over capitalization and by heavy expenditures made necessary in overcoming the difficulty encountered in perfecting its product. The attractiveness of marketing the product at face brick prices was also an item. Some of our manufacturers have even gone so far as to state that past experiences show conclusively that common sand-lime brick can not be made in competition with clay brick. These statements, however sincerely and honestly made, were formed, no doubt, upon a basis of expenditure of large capital for a factory of small capacity. We must admit that a plant built under such conditions can not compete with an economically managed clay brick factory of large capacity, but I contend that a factory constructed along labor saving lines and equipped with machinery adapted to the making of a large capacity can not only compete with other manufacturers of common brick but can produce a more even product at the same figure, if not materially less in cost. Some of you will, I am sure, bear me out in my statement that if your factory had been equipped with the proper machinery and had fulfilled the promises of the promoter as to the average capacity it would produce and had not been found incapable of a practical continuous operation, you would today be in a position to dictate the policy of your local market. Isn't it true that your real troubles have been brought about by breakdowns of lightweight machinery and the losses caused in this manner rather than by any skepticism as to the real merit of your product?

As you have faith in your proposition and have equipped your factory at the expense of thousands of dollars, why not guarantee your product to the purchaser in such a manner that he can not question its durability? You will not be required to furnish this guarantee long after you have introduced your brick, and if you should, you carry no risk if the manufacture of your product is given the proper care.

Has it ever occurred to you to consider the disintegration of clay products of the past as compared with the disintegration of the sand-lime brick product? My general observation has been favorable to the average sand-lime products, not only in atmospheric conditions, but in cases of fire. A just comparison should tend to show us which material had received the best average care in its making. This brings us to the consideration of a standard for our product, not only as face brick but also common brick, which will receive more attention from the manufacturer in the future than it has in the past. If we, as an association, can bring about a standard regulation of our products we not only firmly establish our industry but place about it a cloak of protection which will insure its permanent growth. The manufacture of sand-lime brick has developed so rapidly and so many different designs of machinery and methods of operation have been introduced that it has become almost impossible to treat the subject in a general way satisfactory to the many interested manufacturers. Yet we have our opinions gained by an extended general experience from which some good may result. We have found, first of all that the proper selection of a location for the factory must be considered, for this location must not only be within a certain radius of proper shipping facilities to market points, but must contain sufficient sand of a nature which will allow its manufacture into brick upon a competitive basis with other materials which may be located within the same radius. One should first study the nature of the sand, note the purity, and if it is found to contain gravel or impurities, determine to what extent and whether the same can be separated and the screenings made remunerative, what necessary expense is connected in the drying and screening of the foreign material thrown off by the screen. A screening test of the average sand should be carefully made in order to assist in the proper selection of machinery for reducing the required amount of fine material for the production of a dense brick. If the sand requires drying an estimate should be made showing at what cost the moisture can be driven off. If the material to be used be sand rock, trap rock or silicious bonded material the cost of reduction and screening should be entered into. A sample of the ground material should show a granular particle upon which depends the strength of the product. Some rocks when ground do not show this granular form, but reduce to an impalpable powder which in itself is entirely unfit for the production of a good commercial brick. The important feature, then, at this particular point is to know at what cost properly dried sand can be placed in storage bins and the advantages gained by the use of the rotary direct heat dryer, using such fuel as may be found most economical.

The selection of lime must be made, the value of its bonding qualities determined and the amount required for finishing first-class brick ascertained. Let me suggest the purchase of a high calcium lime wherever possible, the conveying of sand from the pit by a continuous automatic feed conveyor, the drying of at least a part of the sand with rotary dryers, the reduction of the lime to an impalpable powder and the proper proportioning of the materials entering the reduction mills and, when advisable, the positive proportioning of ground materials, to which may be added certain percentages of unground sand. It has been demonstrated that a good commercial product can be obtained by all of the known processes. Each individual system, however, requires care and accuracy in the selection of materials and the proper proportioning of same. Experience has taught us the relative merit of grinding machinery. The tube-mill as a mixing and finishing machine has been thoroughly tried out, other dry material grinding machines have proven equal to the work required of them when the proper care has been taken in supplying material sufficiently dry to pulverize and screen. It is unjust for us to criticize the workings of any machine until the same has received proper

attention, and the class of material for which it has been constructed to handle has been furnished.

The writer was surprised recently to note an article written in favor of a method of manufacturing sand-lime brick in which the use of moisture in the material was recommended while being ground in a tubemill, this article further stating that where sufficient moisture in the natural sand is not sufficient a jet of steam is turned into the mill. This is the first recommendation of this character I have come in contact with, as my experience has been to operate tubemills with as nearly a dry material as is obtainable, owing to the tendency of the mill to clog when operating on damp materials. I will appreciate any information which may be brought out in the discussion of this point.

The dividing of the sand so that a portion is ground with the lime, while the remainder is carried over the machines to be finally mixed with the ground sand and lime, is now being used extensively. In some cases the ground material is placed in the silo where complete hydration takes place, the unground sand being afterwards mixed with it as the material moves forward to the press. In others, the entire mixture of ground material with unground sand is placed in the silo until the entire mass is ready for the press. These two methods deserve our attention and can be installed in any factory with little expense for equipment. The grinding of all materials will produce an excellent brick, but at an added cost, while the finished product will not be superior in any way to the former method. The use of hydrate of lime produced either by steam or natural water hydration can be used by the different methods mentioned, and where magnesia is found in the lime hydrate it is a most positive method of reducing the liability of expansion or bursting of the brick.

However, where real economy and a high grade product are required, the preliminary mixing of sand, ground sand and high calcium lime placed in the silo is by far more preferable than the placing together of hydrated lime under the same conditions.

The men who know and who are demanding high class goods realize that there is more in the way brick are produced than was at first supposed. They also realize that the American does not take kindly to the plastering of brick work and covering up of defects in brick construction, as is carried on in foreign countries. Hence, we must keep to some standard which will reach the demands of the architect for a completed wall. We should not favor the throwing together of crude materials without some method of determining positively the amount of sand and lime used, nor should we be satisfied to make brick with lime spots showing in abundance, nor with swollen brick produced by a mixture of unhydrated particles of lime with the sand. It is easily possible for all to produce an excellent article by giving the proper care to the details around the factory.

Experience in all lines of manufacture has proven it economical and good practice to keep all machinery in first-class condition for the work required of it. Don't let your machinery be neglected, but keep up the repairs, watch the liners of the press, whether rotary or vertical, for they will give you good service if properly cared for.

The hardening of the product has been given much consideration, and it has been found advisable to carry steam pressure of at least 125 pounds per square inch, with preferably a pressure of 150 pounds for economy and safety, in the bonding of the material. The present day practice favors high pressure cylinders, thoroughly lagged and arranged for returning the condensation to the boiler or superheater.

The sorting and shading of the product should receive greater care, as we can not hope to secure face brick prices for a conglomeration of all kinds of colors and classes of brick. Every face brick should be judged for color and edges, and should be placed under storage sheds and sold as face brick. The brick should receive the best of care in handling

and shipping. Not one brick should leave the yard as a face brick unless it has been sorted and declared first class in every respect. There should be a marked distinction in the different grades of brick, and only by this difference can we hope to keep prices right and keep in comfortable relationship with the architect, contractor and builder.

There are numerous details which I might have taken up tending to show the effects of different operations on materials. The coloring of sand-lime brick and the workings of different machines in different conditions, but these no doubt will be talked over in the convention.

In conclusion, let me urge again upon you the necessity of a standard product, more care in the details of the preparation of materials, and the upkeep of factory equipment. Do these things and you will be surprised with what speed the sand-lime brick industry will expand, for we have demonstrated the permanency of our product and are forcing our competitors to realize that it is a permanent, staple article and one which will take its place in the very front ranks among building material.

The President: There is a great deal of meat in that paper, and I think we ought to discuss it very thoroughly. I have a letter here which has been handed me by Mr. Jackson. I would like to read a part of it without mentioning who it comes from.

Dear Sir: We find by our interview with various sand-lime brick manufacturers that there is something lacking in the present methods of manufacturing. We understand that the brick as now constituted lacks compactness and shows a readiness to absorb moisture which in time causes disintegration.

From our experience in pulverizing material we find that the chief cause of disintegration is lack of uniformity and extreme fineness. If the manufacturer would obtain an extreme and uniform fineness of sand and when mixed with the complete hydrated lime, pressed properly, the chemical reaction between the sand and lime which takes place in the drying cylinder, would make a compact brick which would not absorb moisture, thereby overcoming the trouble they are now having.

By our method of pulverizing, in conjunction with the Emerick Improved Air Separator, we are able to produce extreme and uniform fineness which makes an ideal material for the production of sand-lime brick.

We would be pleased to have this matter discussed by the Association during the convention and would be pleased to give full information to anyone to whom you would refer us.

I thought the paper referred mostly to our experience, and not to Mr. Carmichael's experience.

Mr. Jackson: I would like to ask Mr. Carmichael if he would refer me to a plant that dried, pulverized and mixed the material, that was a commercial success in competition with the common clay brick.

Mr. Carmichael: No, I can't refer you to one of those.

Mr. Jackson: Mr. Chairman, I was very much interested in Mr. Carmichael's article. It was a very good article; very well gotten up, and I agree with Mr. Carmichael that there should be a better brick made, but the conditions are so very different. Now there are among us today a few members that say they have a good market for a high-priced brick, but I have not been able to find a plant that took their sand, dried it, pulverized it and made a commercial brick; what I mean, a brick that

could be made at a profit by the people that run that plant and compete against the average clay brick, I mean a brick that is delivered at less than \$6 a thousand. If there is such a plant in the United States and any member knows it, I would like to hear it. I would like to visit it. I asked that same question in Europe and I couldn't get it answered over there. I have come up against just that kind of proposition and they turned it down as they didn't think it was practical.

The President: I know of a plant that is drying its sand, pulverizing it and all its material is properly measured, uniformly mixed and pressed, and they are able to put that brick on the market at the price that would compete with brick such as you mention, and has been operating successfully for nearly two years. I don't care to mention any names without getting permission, but I know that to be a fact. The question of drying the sand, I don't believe is such an awful expense. I figured out the expense of drying at our plant was ten cents per thousand. I found that when we dried the sand we were able to get more uniform results, and able to temper our material more uniformly and consequently lost less brick in the making, and I figured from that the extra cost of drying more than compensated us for less loss in the brick. As to grinding, that is a factor that depends so much on the material. There are some sands that cost almost nothing to grind. Then again there are other sands that are extremely expensive on account of their hardness and physical structure. The cost of grinding sand in our plant figures out about seventeen cents a thousand. We don't grind all the sand. We grind about eighteen per cent of the total sand, making a cost of twenty-seven cents per thousand for grinding and drying. The result of that additional expense of twenty-seven cents has meant to us the difference between the loss of fifteen per cent sometimes of our brick in the making to a loss covering a period of two years of less than two per cent. This is only a single case. Whether that would apply to any other case or all cases I am not prepared to say; but this is a particular case and I have all the figures and data in connection with it. Now, twenty-seven cents a thousand will surely more than cover the loss of fifteen per cent of the brick. In our particular case we have such a clean sand that there is absolutely no plasticity to it, and some of the very best brick we have had was made from the sand as it came from the bank. . . . I see no reason why in any case it should cost more than that, as we have a very hard sand to grind. Our moisture was six to seven per cent. The cost of drying depends on the amount of moisture, and of course the difference in the quality of the brick is more than 100 per cent. Before we did that we had an average strength of not over 2,500 pounds per square inch, and since doing it we have had an average strength of not less than 4,000 pounds, and they have run up to 5,500 pounds. The question comes right back to what kind of a market you are up against and what are you trying to do.

Mr. Bovy: Mr. Carmichael touched on a point of wet grinding. I would like very much to get information on that. My experience has shown you have to dry material for grinding.

Mr. Penfield: The article referred to was published in a trade journal and was a description of a plan in operation here and in which a steam jet was connected for the purpose of adding moisture to the materials as they were passing through a tube mill. A great many people have attempted to put through tube mills sand that was not perfectly dry and when that attempt has been made, with lime in the mixture, the lime adheres to the lining of the tube mill and packs so that no grinding takes place and the material does not go through the mill. That experience has caused all users of tube mills to dry both sand and lime before going into the mill. If there is anyone present who knows that a steam jet can be successfully passed into a tube mill when they are using sand and lime I would like to hear it.

Mr. Edwards (representing the Cranford Paving Co.): It is a patented process and all I would like to say is that it can be done. I can simply say that we do it, and it is an absolute success.

Mr. Bovy: Do you care to say whether you use lime and sand in the tube mill at the same time?

Mr. Edwards: Yes.

Mr. Kwaikowski: About six years ago I made a first attempt to dry sand by mixing with lime and it did not dry the sand. We tried to handle the sand as it came from the bank and we had many failures. We have overcome that and today we are able to successfully use moisture. In order to secure uniform moisture we try to get the sand with no moisture present and then we supply a certain per cent of moisture and this will about explain the difference between simply grinding and manufacturing practically a cement. A discussion is almost useless; it goes with seeing and believing, and I ascribe the difference in the quality of the brick to the proper mixing done in our process. . . .

The President: The question is simply whether what Mr. Penfield has asked can be done or can not be done.

Mr. Kwaikowski: It is a fact that we can add moisture and are adding moisture and are compelled to add moisture in grinding sand and lime for a brick in order to get a high grade.

Mr. Bovy: I wish to ask if he uses hydrated lime or unhydrated lime.

Mr. Kwaikowski: Caustic lime.

Mr. Jackson: I would like to ask how long this particular plant has been in operation.

Mr. Kwaikowski: This particular plant was put in operation in the beginning of June this year.

Mr. Jackson: What price do you get for your brick?

Mr. Stewart: You can not expect me to tell what prices I get for the brick in this convention.

The President: Mr. Stewart, the attitude of the Association is this: it wants to help every member of the Association, and unless there are any points of a secret nature that would hurt a man in dollars and cents, he shouldn't hesitate to bring out the information. Mr. Jackson at the meeting this morning gave us a detailed statement of the cost of brick

at his different plants. I have done the same with our plant. There are other members here who have done the same. The question of cost is one that we are all vitally interested in. The question of marketing brick is an open question. All we have to do is to go out and ask what the market price is today.

Mr. Kwaikowski: We have shipped brick to Philadelphia and sold it at \$27.50. The quotations made at this factory are \$15.00. Of course, Mr. Jackson, I don't think it will help any one of us to find out what you are selling the brick for, because it differs according to the market. One thing I can say and that is this plant is successfully competing with the Eastern hydraulic brick, not in price, but holding out in quality, by insisting that if a man wants our color, that the Eastern hydraulic can't furnish that color.

The President: I believe that the idea of the plant here is to compete with the face brick trade, and they are not in the common brick market at all.

Mr. Penfield: In the paper read by Mr. Jackson, in which he reported his observations in Germany—among other things he stated a method approaching quite nearly to that which is in use in the local factory, as I understand it, differing in one element only; he stated that a method had come into use since his visit there consisting of a revolving tube, not a continuous feature, but a batch mixer in which sand was placed and pulverized with quick lime, and the two revolved together while steam and water were admitted into the cylinder. That is one of the two features in which the German method differs from that used locally. The steam is not admitted to hydrate the lime, but to give sufficient moisture to develop the bond, and in Germany steam is admitted for the purpose of hydrating the lime and furnishing moisture, and if the moisture is not sufficient, then some water is added.

Mr. Jackson: In Germany they had no balls for grinding as they have here.

Mr. Kwaikowski: I have visited forty odd factories in Germany, and all the brick made in Germany were of very inferior quality. The idea there is to make your product as cheap as possible.

Mr. Jackson: Did you visit the Strubie plant at Kiel? Do you call that good brick?

Mr. Kwaikowski: Yes, it is a good brick.

Mr. Jackson: What do you think of the Krieger brick?

Mr. Kwaikowski: It is a hard brick, but no finish to it; none of this brick compares with good pressed brick.

Mr. Jackson: There is a brick made in the Kommich plant, right in Berlin, that were equal to face brick in this country.

Mr. Kwaikowski: We should not judge from appearances, but according to the rules of the architect and builder.

Mr. Dyett: Is it your idea that sand-lime can only be successfully made as a face brick?

Mr. Kwaikowski: Not at all. Our idea is to produce a high priced article and get a top notch price.

Mr. Penfield: I believe with Mr. Jackson and Mr. Kwaikowski we have the representatives of two methods of manufacture, one aiming to make common brick in competition with common clay brick and doing so successfully in all of its plants; the other aiming to make in a factory of about like cost a pressed brick to be used for face brick purposes to be sold in competition with high-class pressed brick. It has always been my personal inclination to make sand-lime brick for the pressed brick trade. Possibly that inclination is due to the fact that we use processes that are capable of making a brick of uniform size and finish and it naturally follows in making a brick of that character it should go into competition with pressed brick on the market. If the makers of sand-lime brick for pressed brick purposes could only show more plants operating successfully from a financial standpoint, both the conditions of manufacture would be fairly demonstrated here today. We know Mr. Jackson and some of his customers have operated their plants successfully from a financial standpoint, and they make common brick only. There are some plants operating making an excellent brick that could be sold in the market with a high-class pressed brick made of clays and shales. Whether they can show their balance on the right side of the ledger I am unable to say.

Mr. Jackson: There is a plant in Schenectady that is making an excellent quality of face brick. I never saw a nicer quality of brick. But they can not sell it. What is the matter?

Mr. Plummer: I am speaking of Buffalo. In Buffalo they don't want a pressed brick of nice finish. They want them crooked, and if they are not crooked enough they have them made so. If we had only face brick we couldn't sell them in Buffalo, because there is no demand for fine face brick unless it is for interior finish.

Mr. Kwaikowski: We want to make the face brick a fad. We must interest the architects to use a light colored building material.

The President: I notice back on the table a few good face brick which were put there by Mr. Bovy, and I presume represent the output of his plant. I would like to ask Mr. Bovy if his aim is to supply the face brick market or the common brick market, and if the face brick market, if he is making a success.

Mr. Bovy: That is the product of our plant. In the running of our plant, we are aiming to produce a first-class brick, not entirely, but as much as we can find a market for. We have been able to produce a first-class face brick in limited quantities. We have colored brick that have been out in the weather for two winters, and I must say our brick have shown up first rate, the buff colors especially. I might mention that we run the color through the silo. As to our market, we have very keen competition in pressed shale brick. We have to meet the competition of the St. Paul and Indianapolis. We also have to meet the competition of the Menomi Brick Co. and the St. Louis brick. The brick sell for

\$17 or \$18 a thousand. We have been able to market our brick at \$18.00 a thousand; drayage is added to that—about seventy-five cents a thousand. In regard to local competition, in our little town I am somewhat inclined to talk like our friend, Mr. Plummer; people are getting to use a pagan brick, or any old thing. We aim to keep our factory running by producing brick in competition with common brick. We run face brick and are gradually broadening out in that. I wish to touch on a point that has been touched upon, that is, that the brick manufacturer and brick salesman will have to aim to get into closer contact with the man on the wall, with the bricklayer and with the architect. I am afraid that most of us are not doing enough work among architects. I believe even architects can be talked up to using a certain kind of building material. I believe certain effects can be made by using sand-lime brick in certain color combinations which are impossible in clay brick. I am fortunate enough to have certain architects in our vicinity who have come out very bravely and have advocated sand-lime brick, because they can be had in certain color combinations, and the shades match better than clay brick, and I think considerable work can be done by the individual and the Association by disseminating literature among the architects. In this way they will come to see possibilities and will be much more prone to use sand-lime.

The President: What per cent of your output do you sell of face brick?

Mr. Bovy: About five per cent.

The President: We represent the whole country, and not a particular community. There is no question but what there are some communities where a plant could sell its whole output of face brick. I notice in the report of the government that the sand-lime manufacturers have been selling about ten per cent of their output of face brick. As a matter of fact, of all the brick used in this country, there was only five per cent used for face brick. Of that five per cent there are a hundred different varieties, and the sale of face brick depends on the man liking the face brick and wanting to get a certain combination. The Sand-Lime Association as an industry can not expect all the people to want face brick. We have got to get the industry in shape to be able to go into the proposition as a whole, which means, to my mind, that we have got to be manufacturers of a brick competing with a good class of common brick, and we have got to make a sand-lime common brick better than the clay brick. The question of the cost of that brick depends upon two things; the simplicity of the plant to begin with, and the ability to get a good, strong, uniform output—whether it is a 10,000 capacity plant or a 50,000 capacity plant. We are convinced that the little plants can make a good success.

Mr. Buck: Mr. Allen, of Winchester, paid a visit to my plant. I had installed a wet plant and he said, "Why don't you install a tube mill? I have a tube mill." At the outset, I made my stuff perfectly dry, but now use a small per cent of water. Mr. Allen is not a seller of tube plants,

and he paid me a friendly visit. He said the introduction of caustic lime caused it to get dry before it got very far into the mill.

Mr. Bovy: We had in mind installing a rotary hot drier in the first instance when we built the plant. I was persuaded not to do so because the rotary hot drier was supposed to calcine the sand. I put in one last spring and operated it all summer, and we are drying sand more economically and have increased the quality of our output. We run our sand direct from the drier to the storage bin, and it gets into the tube mill hot—very hot, and in the tube mill it doesn't cool off any—and then into the silo and then to the press. I have found no detrimental effects whatever; on the contrary, beneficial effects. We use a coke in drying our sand.

Mr. Lippincott: We have been using a sand which is pure silica. We have been compelled to move and have a sand that contains eight per cent of loam and are very much interested to know whether we can use that sand in its natural state.

Mr. Bovy: We have a layer of loam on the top of our sand bank which probably varies from eight to fourteen inches. We have been thinking of stripping off that loam, but since we have been using our rotary drier we don't have time to strip it off. One day I was out inspecting and I saw the men feeding chunks of that loam into the drier. I called the foreman's attention to it and he told me they had been running that way for two days. I hurried out and inspected the brick made the day before. I couldn't distinguish any difference. The foreman then took me into the dust chamber back of the drier (10 x 10 and 20 feet high) and he told me what became of the loam. I should say there were four wagon loads of dust as fine as you can imagine lying on the floor of that dust chamber, and when we had been using clean sand he would clean out the dust once a week, but it then needed cleaning after two days.

Mr. Holden: We don't grind our sand, but have deposits of various sizes of grain. We formerly used nothing smaller than 100 mesh, but having a large deposit of very fine sand containing a fine clay, we found by experiment that a small percentage of clay adds to the density of the brick without interfering with its appearance or its strength.

Mr. Buck: We are using a sand which has yellow clay—eighty per cent silica—which makes a most superior product. The loam that is just finely ground sand will add to the strength of the product.

Dr. Lazell: There really isn't any difference in one way. I think you will get about the same results. There is no mechanical advantage in hydrating caustic lime with sand and adding water and grinding together, except each grain of sand gets a better coat.

Mr. Buck: I am using hydrated lime. I have never been convinced that there was a real difference under the same conditions.

Dr. Lazell: The same reaction takes place whether you hydrate lime alone or whether you hydrate it in the presence of sand. When you buy a hydrate you are never sure that you are getting a true hydrate.

Mr. Bovy: I would like to ask if any member of the Association has done anything towards obtaining or working out a simple formula for testing lime as it comes to the factory, either in hydrated or unhydrated form.

Mr. Jackson: I corresponded with Dr. Lazell on that subject. I had a simple apparatus from Germany, costing about \$13 in U. S. money. Very simple—anyone can handle it, and we find that it has done the company all kinds of good. It enables me to determine the strength of calcium. In other words, it determines whether I am getting my money's worth.

The President: I should think at that price all manufacturers can afford to have it. In other words, the time will come when we will want to buy our lime on its causticity, and when we get the manufacturers to sell us lime on that basis we will have accomplished a good deal. I would suggest that you give the details of that proposition to the Secretary, so we can give it to the press.

I have a letter which I think will interest the Association from our old stand-by, Mr. Squier.

My Dear Mr. President: Please state to the gentlemen present that matters of much importance to our Company prevent my attending this Convention and I assure you it is a very great disappointment to me that I am unable to meet with you.

You, contrary to my wishes, assigned me a place on the Executive Committee and after the fire that early in the year destroyed our Paragon Plaster Mill, I requested you to appoint someone else in my place as I felt I could not properly discharge the duty. I would like this explanation made that it may not appear I was negligent.

The fire referred to necessitated our temporarily turning the little brick plant into a plaster mill and consequently we have been out of the sand-lime brick business for many months. Apropos to this it is quite amusing to have customers, who were apparently using sand-lime brick rather reluctantly, come to us and implore us to get busy and make some. We have country trade that are clamoring for our brick and it sounds good to us and we hope by February first to be ready to operate again.

To my old friends and the new comers I send a hearty greeting and hope you will have an enthusiastic and profitable meeting, as I am sure you will.

Yours very truly,

W. K. SQUIER.

Mr. Irvine: I have a question in the question box: "What is the best form of measuring machine for the least money?"

The President: I presume that question ought to go a little further and state for what purpose it is to be used. There are to my knowledge, four or five different machines on the market. I have investigated quite a number and I have found there is one, I don't know who it belongs to, a sort of a pocket that slides back and forth that is very cheap, in fact I suppose you can build it yourself if you want to, but I should say a good deal depends on the accuracy of that measuring device, whether you keep it filled up, seeing that your material falls down into it. There is another measuring device, the Richardson weighing scale. That I tested

quite extensively in my own plant and it worked splendidly as long as we had a man there to watch it. The man who sells this machine told me it was proving a decided success for large quantities, but for a small quantity he must acknowledge it not to be a success. It is an expensive machine. The Trump machine I am using myself, and find it very satisfactory. I couldn't keep it from flushing, although I won't say that it is a failure, because the Trump people tell me they are making some improvements which will enable them to overcome that difficulty. Our esteemed friend, Mr. Berg, has a measuring machine which seems to be quite successful and I suppose he will sell it at a very low price.

Mr. Berg: You can measure hickory nut size or any other. (He brought one of his measuring machines with him and explained by the use of his machine, as an exhibit.)

Mr. Carmichael: We have built a machine similar to the Trump machine. It is absolutely the same method as the Trump people use except that we separate and make one machine for certain percentages of crushed lime and certain percentages of sand. We have measured lime broken to hickory size down, and the reports of all the engineers have been most favorable to this machine. It gave them the least trouble of any piece of machinery in their factory. When you use hydrated lime you meet with the same trouble of flushing, and as long as we are working on a fairly damp hydrate we have no trouble, but the minute we break away from the wet and use a very dry hydrate, it does not work at all. We have had most excellent results on caustic lime. It costs about one-third of the Trump machine.

Mr. Walton: We have had trouble with the measuring devices. We have overcome the trouble. We use the Trump machine. The fact of the plant being flushed with lime is known to all our workmen, as they often have to run out to save their lives. We had a lot of trouble. One day a common, ordinary day laborer came to me and told me that he thought he could overcome this trouble. At the discharging point of the Trump machine is a large opening—two openings, one from each table—now the opening from the lime or silo table was possibly eight inches long and three or four inches high. When this machine is working right, about one and a half inch stream comes out there. This workman said: "Why not close up that opening so that no more than one and a half inch stream can come out?" We had it fixed that way and from that day to this we have never had any more trouble in the plant.

Mr. Jackson: We have had some experience with measuring machines. We had the Sandstrum measuring machine in our factory and it was not very successful. We had the same conditions that Mr. Carmichael referred to. It was alright as long as the lime was the same temperature or had moisture, and sometimes we got into dry lime and had trouble all over the factory, and we took it out. We couldn't rely upon it feeding very slowly; I haven't seen any machine that you can rely on. The only machine I can rely on is the man with the shovel.

Mr. Penfield: We have the same trouble.

Mr. Schultz: I have used the Berg machine. We used hydrated lime and dry sand. It operated perfectly. We have made tests and as far as we can detect we couldn't notice any difference after use. I think it wears alright. We feed hydrated lime by gravity. I will say this, that the only trouble has been to feed the lime back from the bin, but the machine has always taken the measurements perfectly. It doesn't flood because the lime is underneath.

Adjourned to 9 a. m., December 16.

December 16, 1908, 9:00 A. M.

Treasurer Plummer read his report, showing \$463.20 on hand.

It was moved and seconded by Mr. Mellen and Mr. Smith that the report be accepted. (Carried.)

Mr. Plummer: I believe that every member present, if it is possible to do so, should either pay today in cash or by check the amount of his dues and assessments for the ensuing year. Last year the bulk of money came in after the first of June, which has caused a lot of trouble. The last ninety days has brought in a large portion of the money, and it isn't fair to the Association that the members should withhold the money due until so late in the year. We ought to have the money the first of the year and pay our bills. I therefore suggest that all members pay their dues right away so that the Secretary can pay the audited bills at once. I would also suggest that all members who were not present yesterday should vote on the question of the assessment of dues. I suggest that all members not already enlightened on the question of dues and assessments be enlightened and vote on the same. It was unanimous yesterday and I think it should be made so today.

Mr. Duerr: We mustn't forget the fact that in all Associations of this kind you are expected to pay your dues in advance, and under the by-laws, if the dues are not paid in thirty days you are not in good standing in the Association. We had better begin now and turn over a new leaf and do this in a business-like way. The dues paid now are not for last year, but for this coming year, and each meeting is the beginning of a new year for the Association.

We omitted yesterday one paper on the program, "Coloring of Sand-Lime Brick and Materials for Coloring." Several of the members here have asked me to bring the matter up, as they are vitally interested. I would suggest that before we start with the program for this morning, that that matter be given a little discussion. We can not devote too much time to it, and I would suggest that whoever has a question to ask, that we take it up.

Mr. Schultz: The feature we are most interested in, we have had most trouble to obtain good colored brick that will meet the clay shale brick on the market, and we would like to learn what the Association knows.

Mr. Duerr: The matter of coloring has been thoroughly discussed at many meetings of this Association, and we can probably save time by putting the proposition in as few words as possible. When this industry first started, we were all very enthusiastic on making all the colors of the rainbow and making layer cakes, and some of us spent a good

deal of money. My conclusions are that we are making a great mistake in trying to imitate. We have a material that has its good features and we ought to stand on that material. When we undertake to make a red-brick—I haven't seen a red brick that comes up to a red clay brick. The bleaching of the color in contact with lime and steam fades it out so that the brick has a pinkish color. Some manufacturers have undertaken to overcome that by letting the brick stand out after introducing the color to carbonize the outside surface and prevent bleaching. But the danger is that it makes the brick soft, which gives bad edges and I have noticed that the weather peels off that face to a certain extent which is dangerous. When it comes to a black brick, we have been able to produce a slate colored brick, but not a black such as the black headers which we see in clay brick. When it comes to the buffs I think we have been most successful in the buff brick. Buff is a color which is not affected seriously by the bleaching process and I have seen some beautiful buffs. Consequently my own feeling is first to cut out colors entirely if you possibly can and stand on the natural color that we produce, and next, if we do have to put up a color, give them a buff, but I wouldn't play with the red, because a man that has any taste at all hasn't any use for our red, and we are putting ourselves in the position of making a second class material. As to the coloring of brick there is no difficulty. There are a number of firms in the country that make good colors. You want a good oxide. Avoid the colors that will bleach; no vegetable—and the price of the color does not indicate the cheapness at which you can color brick. A strong color at a high price is cheaper than a weak color at a low price. My own experience has been that the higher priced colors gave the most satisfactory results and were cheapest because I was able to use less of them. Mr. Lippincott has done a great deal in the way of coloring, and his has been more successful than any brick I have seen. Perhaps he can give us some information on the subject.

Mr. Lippincott: We were located in Philadelphia where the old red brick had its home. There was a demand for colored brick and we were forced into it. There was one particular color which seemed to be most attractive. It was rather a salmon color. We had to make that color to get the business; making a face brick only. It took about forty-five experiments before we got it, but we finally got it. We have made some reds but I think they can not compare with the clay brick. Some of them look pretty well. We have gotten a very pretty brown that has been quite successful, but the buffs, as Mr. Duerr has said, have been the great success.

Mr. Mellen: Has anybody made a darker gray brick or shaded from the white down to a darker color?

Mr. Holden: We had an order from Boston to match some stone work and we had to get a granite gray and we obtained the result by using a larger grain of sand and a dark grain of sand without any artificial

color; we got a dark gray color from this. We changed the proportion of lime also.

Mr. Smith: I want to ask three questions: First. In the silo system would you put the coloring matter in before or after leaving the silo? Second. Has anyone used plaster of paris in brick? Third. Have you used furnace clinkers for making a mottled brick?

Mr. Duerr: I can answer Mr. Smith's last two questions. I would never under any circumstances use plaster of paris in brick. It makes it disintegrate. The only way you can make mottled brick is by rubbing your surface off or cutting it down somewhat. The fine will always go to the surface and consequently you can not get good results that way.

Mr. Bovy: As to Mr. Smith's first question. We have made comparative tests in that regard and find with most colors it makes practically no difference. We have obtained our best results, however, by putting coloring matter through the silo. I believe we obtain a faster color in that way because the coloring matter I believe is bleached to its fullest extent by coming in contact with the hydrating action of the lime.

Mr. Buck: I believe I have overcome pinkish effects in the red by using a small percentage of lamp black.

Mr. Mellen: I would like to know if lamp black has any tendency to weaken the strength of the brick.

Mr. Buck: Not at all.

Mr. Mellen: Have you tried graphite?

Mr. Buck: I have not.

Mr. Duerr: One other thing I have found, and that is that as far as getting absolute uniformity of shade is concerned, I have never found it possible. Two batches never give absolutely the same shades although you use the same color. I understand the color people can not absolutely control the strength of their color, and therefore it is a guessing proposition all around.

Mr. Lippincott: Is there anything to stop the magnesia that comes out on the colored brick?

Mr. Duerr: You mean efflorescence. It can not be determined without an analysis of local conditions. One reason for it is that the brick isn't well made and you have a certain amount of uncombined lime and the other reason is that they contain soluble salts which are drawn out. We have found that each individual case had its own individual reason.

Mr. Plummer: It has been suggested that a very effective way of putting in color is to grind the color at the same time you grind lime and sand.

Mr. Duerr: I have a letter here from Mr. Allen of the Winchester Granite Brick Co. in reference to the architect of the Treasury Department being prejudiced against sand-lime brick. I have had in the last few years letters from people throughout the country asking whether something can not be done to get the Treasury Department to use our

brick in some of its buildings. In most of the cases where this matter has been brought up and I have investigated, I have found that the brick the sand-lime men wanted to sell wasn't up to standard. In other words, the Treasury Department specified a good quality of face brick and the man was making a good quality of common brick, and the Treasury Department has received some poor samples of brick. I am satisfied the Treasury Department will use sand-lime brick where the brick comes up to the standard quality. I would suggest, however, that since we are here in Washington it would be a pretty good scheme to appoint a committee to go over and see Mr. Taylor and put it up to them and for this committee to report to this convention.

Mr. Jackson: Mr. President, I make a motion that you appoint a committee of three with yourself and go see Mr. Taylor. (Mr. Holden seconded the motion.)

Mr. Holden: I asked to be allowed to submit samples for common brick work on a government proposition, calling attention to the fact that we were furnishing brick that was outside the province of Mr. Taylor, and I received a letter saying that sand-lime brick would not be considered under any circumstances.

Mr. Bovy: I had a similar experience.

Mr. Jackson: The Bakersfield, California, post office have used sand-lime brick. I don't know what influence was used to get it in.

Mr. Duerr: I think if you would go and put up a good business proposition without using a lot of influential letters from your Congressman, that you will get better results.

Mr. Plummer: The Glens Falls Company have a contract with the U. S. Government for 500,000 sand-lime brick for West Point.

Mr. Duerr: The Treasury Department has recently specified sand-lime brick for a large building in Porto Rico.

Mr. Bovy: The government inspector's in my building, and he advises me that the War Department used considerable sand-lime brick, but the Treasury Department was putting up a much better class of buildings than the War Department and to his knowledge was not using sand-lime brick. I mentioned the Bakersfield Postoffice but he hadn't heard of that.

Mr. Duerr: Mr. Jackson's motion was carried. I will appoint Mr. Jackson, Mr. Mellen and Mr. Bovy.

The next thing on the program is the consideration of the report and recommendations of the Joint Committee of this Association acting with a similar committee from the National Board of Fire Underwriters. Mr. Jackson will have charge of the consideration of this report.

Mr. Jackson: As you will remember the Underwriters discriminated against our product and if we had allowed that to continue our brick would have lost its prestige and the rates would have been higher than for the clay brick. They took clay brick for the standard. The matter was taken up by your Association through its committee and after cor-

respondence and a number of meetings and tests that were made, they have withdrawn the stand that they had taken.

There were five samples of sand-lime brick and four samples of clay brick submitted to the committee of the Underwriters and your committee, and tests were made and were unsatisfactory. After these tests were made we found that the rules that we had agreed upon were too severe. None of the brick came up to the requirements. The sand-lime brick stood up better in some respects than the clay; the clay in others; so they have formulated a new set of rules which have been agreed upon by the Committee of the Underwriters and your Committee. Now gentlemen, I have here the letter or report that was submitted to your two committees under date of January 17, 1908; Special Investigation Report 114. (Mr. Jackson quotes from report), and then it goes on and tells how these different tests shall be made—the fire tests—the transverse tests—the compression test—the freezing and thawing and the absorption tests—their way of making tests—the plans in use—then it goes on and gives a description of the brick. "In selecting the samples" (Mr. Jackson quotes from report.) Then it goes on and tells how the different tests shall be made. If any gentleman wants to know regarding any of these tests, I can read that. If not I will skip it. I believe it is the intention of the Association to get this published anyway. There were five samples of sand-lime and four samples of clay brick. The clay brick were taken from four different locations, St. Louis, New York City, Philadelphia, and Chicago. They were a fair quality of clay brick, hard burned. There were five different sand-lime brick taken from five different sections of the country and five different methods of making so as to be a fair representation of the art. "Inasmuch as it was not intended to report on the quality" (Mr. Jackson quotes from report the different groups of samples). It goes on with the description of the apparatus which is quite lengthy and how the tests are made. I will read the conclusion of the report. The meat of the whole proposition is contained in the following words:

"It is considered that in the light of these examinations made and results obtained, from the tests of the nine groups of samples, sand-lime brick can be made commercially of such quality as to be in a class with good well burned common clay brick, with the possible exception of its fire-resisting properties. Nevertheless when properly made, sand-lime brick possesses fire-resisting properties of very considerable value, but the relative value of these properties as compared with clay brick is not considered to have been fully demonstrated by these tests; having further in mind the fact that neither the sand-lime nor the clay samples compared in all essential particulars with the standard outlined, the only final conclusion to be drawn from the data above set forth would seem to be that a rating being possible under a proper standard for both sand-lime and clay products, as marked from the view point of the Underwriter, the sand-lime products used in these tests seem to classify but slightly lower than the common clay products."

Mr. Duerr: That is the report all boiled down. The two Committees formulated new specifications based on the results of this work.

Mr. Jackson: In September after this report was submitted to your Committee, we had another meeting in New York City with the Committee from the Underwriters and here is a copy of the revised specifications and rules. The original rules were too severe. (Mr. Jackson reads Tentative Test Specifications.)

TENTATIVE TEST SPECIFICATIONS FOR BUILDING MATERIALS IN THE FORM OF BRICK.

TESTS REQUIRED: The product shall be subjected to the following tests: Absorption, Freezing and Thawing, Fire, Transverse and Compression and the weight per cubic foot determined. Additional tests may be called for when in the judgment of the Underwriters' Laboratories, Inc., it may be necessary.

All the tests are to be made at the Underwriters' Laboratories, Inc., at the expense of the applicant.

SELECTION OF SAMPLES: For the purpose of the tests at least seventy-five (75) samples representing the ordinary commercial product shall be provided.

They may be selected from stock or taken at such stages after manufacture as may be desired by the collector, or made in the presence of the collector at his discretion, but in no case shall the samples be more than twenty-four (24) hours old when taken. The samples shall be approximately 8 inches long, 4 inches wide and 2 inches thick, and in all cases shall be the size of the commercial product.

Information regarding the character and treatment of materials used, the method of manufacture, and also samples of raw materials, shall be furnished the collector, if required by the Underwriters' Laboratories, Inc.

The samples shall be tested between the thirtieth (30th) and sixtieth (60th) day after manufacture.

TESTS: Five (5) samples shall be required for each test, except fire tests, where twenty-six (26) samples are necessary. All tests shall be made on full sized samples, where possible.

All samples shall be carefully examined and condition noted before subjected to any test.

PERMEABILITY AND ABSORPTION TESTS:

The five (5) samples to be first thoroughly dried to constant weight, in an atmosphere of about 250 degrees Fahrenheit and weight carefully recorded. Samples then to be placed on their faces in a pan or tray of water to a depth of one-half inch.

The samples shall again be carefully weighed at the following periods: $\frac{1}{4}$ hour, $\frac{1}{2}$ hour, $\frac{3}{4}$ hour, 1 hour and each hour thereafter for a period of seven hours. The level of the water shall then be raised to a depth of two (2) inches, and samples again weighed at 12 hours, 24 hours, and 48 hours respectively from the time of first immersion.

NOTE.—Superfluous moisture to be removed by carefully wiping with a damp cotton cloth before each weighing.

FREEZING AND THAWING TESTS:

Five (5) samples to be immersed to a depth of two (2) inches, as described in the absorption test, until thoroughly saturated, and the weight carefully recorded; to be then placed in a refrigerator and subjected to a temperature of less than fifteen (15) degrees Fahrenheit for at least seven (7) hours; to be then removed and placed in water at a temperature

of not less than 150 degrees Fahrenheit nor more than 200 degrees Fahrenheit for one (1) hour.

This operation to be repeated ten (10) times, after which the samples are again weighed while still wet from the thawing.

NOTE.—Immediately on completion of this test, samples are to be thoroughly dried and subjected to transverse and compression tests.

FIRE TEST:

Twenty-six (26) samples to be thoroughly dried to constant weight and tested as follows: Twenty-one (21) to be placed in a panel 18 inches high, 24 inches long, and one brick thick. The samples to be laid in mortar consisting of one (1) part Portland cement, three (3) parts lime, twelve (12) parts clean, sharp sand, with joints broken, having one (1) header and five (5) stretcher courses—the header course being in the middle. Panel to be allowed to season fourteen (14) days in a warm, dry atmosphere before testing. The panel to compose one side of a gas furnace, suitably constructed to permit of the removal of the panel for water treatment at the end of the fire test. The sample panel to be subjected to fire on one side only, for a period of one hour and thirty minutes. Temperature of furnace to be raised uniformly from that of the atmosphere to seventeen hundred (1,700) degrees Fahrenheit in about thirty (30) minutes, and remain at about that temperature for the succeeding hour. The temperature of the material at a point $4\frac{1}{2}$ inches from the exposed surface to be recorded during the test.

At the end of the fire test, panel is to be quickly removed from the furnace and a stream of water immediately applied for one (1) minute through a $\frac{3}{4}$ -inch nozzle, at a pressure of seventy-five (75) pounds per square inch at the base of the panel. The distance of the nozzle from the sample to be twenty (20) feet.

After the above fire treatment, the condition of each sample shall be carefully noted.

NOTE.—Ten (10) samples having the best appearance, selected from the fired panel, to be tested for transverse and compressive strength.

NOTE.—Samples having rough or uneven surfaces are to be made even by a thin layer of plaster of Paris.

TRANSVERSE TESTS:

The samples to be placed flatwise on two rounded knife-edge bearings set parallel seven inches apart. The load is to be applied on the top, midway between the supports and transmitted through a similar rounded edge until the sample is ruptured.

The modulus of rupture shall be determined by multiplying the breaking load in pounds by twenty-one (21), (three times the distance between the supports in inches), and dividing by twice the product of the width in inches by the square of the depth in inches.

Twenty-five (25) samples, which have been treated as follows, shall be tested:

- (a) Five (5) samples which have been thoroughly dried to constant weight.
- (b) Five (5) samples which have been saturated as prescribed in the absorption test.
- (c) Five (5) samples which have been subjected to freezing and thawing treatment as prescribed in the freezing and thawing test.
- (d) Five (5) samples which have been fired on one side only and subsequently dried.

NOTE.—The above samples to be selected from the fire panel.

COMPRESSION TESTS:

To be made on both pieces resulting from the transverse tests, measure and then bedded flatwise on blotting paper to secure a uniform bearing in testing machine, and crushed. Total breaking load is then divided by the area under compression in square inches.

THE FOLLOWING REQUIREMENTS SHALL BE MET TO
SECURE THE APPROVAL AND CLASSIFICATION
OF THE MATERIAL REPRESENTED BY THE
SAMPLES SUBMITTED.

(a) Absorption (being the weight of water absorbed divided by the weight of the dry sample) shall not average higher than 20 per cent, and no sample shall exceed 25 per cent.

(b) Freezing and thawing process shall not cause a serious cracking or spalling in any of the samples tested, nor cause the disintegration of the material.

(c) Pending further investigation for the purpose of developing a proper requirement for determining exact fire resisting properties, samples to be tested by the method set forth in this specification, and classified according to the merit shown under the test.

NOTE.—The fire test specified has been demonstrated to be unsuited for the determination of the EXACT relative effect of fire on different materials of this character. It does, however, afford means of ascertaining whether or not the materials tested are unduly susceptible to damage by fire.

(d) Modulus of Rupture must be as follows:

For samples thoroughly dry, average shall not be less than.....	400
No sample shall fail below.....	325
For samples thoroughly saturated, average shall not be less than.....	300
No sample shall fail below.....	245
For samples subjected to freezing and thawing process, average shall not be less than.....	265
No sample shall fail below.....	210

(e) The ultimate compression strength must be as follows:

For samples thoroughly dry, the average shall not be less than	2,500 pounds per sq. in.
No sample shall fail below.....	2,000 pounds per sq. in.
For samples thoroughly saturated, the average shall not be less than.....	2,000 pounds per sq. in.
No sample shall fail below.....	1,600 pounds per sq. in.
For samples subjected to freezing and thawing process, the average shall not be less than....	1,675 pounds per sq. in.
No sample shall fail below.....	1,500 pounds per sq. in.

Mr. Duerr: We have two letters from Professor Woolson and Dr. Lazell that they were kind enough to write as to their conclusions of the results of this work.

NEW YORK, October 2, 1908.

Mr. H. O. Duerr, President of National Association of Manufacturers of Sand-Lime Products. Dear Sir: In accordance with your request I went to Chicago in February last and witnessed the fire tests made upon various sand-lime and clay bricks at the Underwriters' Laboratories. I took careful notes of same and have compared them with the descriptions in the Laboratory Report. In my judgment, the

report statements of the results of the various tests are very fairly made, though some of the deductions are not as conclusive as would seem to me to be justified by the tests. However, the Laboratories, as a matter of policy are always very conservative in their statements and their statements and their concessions in your case are perhaps all that could be expected.

I was convinced from my observations of the tests that the superiority of clay bricks over the sand-lime brick was not proven. This the Laboratories Report frankly admits. I think the results were significant because with one exception the quality of the clay bricks tested was above that of many brands of clay brick in daily use in important buildings in different parts of the country, whereas the sand-lime bricks were a better representative average of its class.

Personally, I believe a wall of sand-lime brick subjected to the ordinary fire which cleans out a building, would be in as good condition for repair and use a second time, as if it were built of clay brick.

In my judgment, the strength, freezing and absorption tests upon the samples submitted gave very favorable comparison; the latter test being in favor of the sand-lime brick because of its slow rate of increase.

As stated to you in my letter of suggestion August 7th, on the Laboratory Report, I think the question of the relative merits of the two kinds of brick as fire resistants can only be settled by an extended investigation upon a wide range of varieties subjected to a series of tests of different degrees of severity. In this way a test could probably be found which would be severe enough to differentiate between the low and high grade brick. The test employed in this investigation was too severe to satisfactorily accomplish this, and I am pleased to note in the revised copy of the proposed set of specifications for methods of test which the Laboratories have recently sent you, that they endorse the idea.

The tests demonstrate that if the Sand-Lime Brick Manufacturers expect to compete successfully in this contest with clay products, they must bend every energy and apply all their skill to produce a brick of proper proportions and density. The bricks must be hard with clean, sharp edges. Such bricks are being made in various parts of the country, and they will always give a good account of themselves. Unfortunately, there have been a large number of plants established throughout the country which have been managed either through carelessness, or ignorance, in such a way as to put a product on the market which has cast discredit upon the whole industry.

The time has come now when you must "make good", or acknowledge defeat. The public having had experience will no longer take your product because it is a "new thing" and the man selling it saying it is "good." His saying so does not make it so; he must prove it.

To operate the business successfully a man must have had much experience and put into the work a large amount of energy and patience, and above all, by constant experimentation, keep the quality of his product at the highest possible grade.

Yours very truly,
IRA H. WOOLSON.

PHILADELPHIA, August 18, 1908.

Mr. H. O. Duerr, President N. A. M. S. L. P.: Referring to the report of the Underwriter's Laboratory, dated June 17th, and which we discussed in New York, I would suggest as follows:

The changes in the specifications for brick were thoroughly discussed at our New York meeting, and were embodied in our report to the Underwriters. I trust that you will have forwarded to me a copy of this report, together with Professor Woolson's suggestions as to the fire tests.

I would suggest the dropping of the specific gravity requirements altogether, as the results give no valuable data.

Referring to the recapitulation and discussion, I do not think sufficient weight has been given to the rate of absorption. This, to my mind, is more important than the total absorption, since the slower the rate at which the bricks absorb moisture means less penetration of the moisture into the wall in storms, and hence a drier wall. While the absorption decreases the strength of a sand-lime brick, the strength is fully regained upon drying, and from repeated wettings and dryings the bricks gain in strength.

FREEZING AND THAWING.—This test does little or no damage to sand lime bricks, and if the bricks are dried out before being subjected to the compression test, a gain in strength is generally found. This is not true of clay bricks, as is stated in the report.

FIRE TESTS.—In this test I can see no advantage of subjecting the brick to fire on all six sides, as it never has to meet this condition in practice. The action of fire upon a sand-lime brick is to change the binding material (hydrated calcium silicate) by driving the water off, thus, to some extent, destroying the bond of the brick. Any lime present, either as hydrate or carbonate, in the brick would be converted into quicklime. This quicklime is a very poor conductor of heat and would tend to protect the part of the brick beneath it. Further, since the action of heat is to drive off water, considerable of the heat must be used up in this manner, thus tending to lower the temperature of the surface of the brick. The continued action of fire will cause some disintegration by calcining the surface, but unless the fire is of long duration, the disintegrating action would not penetrate very far into the brick. The application of water after the fire would cause some washing away of the surface, but would otherwise do little damage.

As clay brick have already been calcined if properly made, the fire would have but little, if any, calcining action upon them. It would, however, produce uneven strains, due to the expansion which, upon application of the water, would cause the surface of the brick to crack and spall. Thus, the action of fire on these two classes of brick is radically different, and, to my mind, there is but little difference in the value of a wall of either brick after it has been subjected to fire.

The sand-lime brick wall could be easily repaired by thoroughly wetting the surface and applying a coat of cement mortar. In my opinion, this would adhere well to the bricks.

In case clay bricks contain nodules of lime, these will tend to disrupt the brick in the fire and water test.

With the data at hand, I doubt very much that specifications can be drawn as to the strength which bricks should have after having been subjected to the fire and water treatment.

Taking up the tests as a whole, the clay bricks show much greater variation in their behavior in all tests than the sand-lime bricks. This would be expected from the method of manufacture of the clay bricks, and the greater uniformity of the sand-lime brick is a point in their favor.

Referring to the second table, giving the results obtained by the transverse and compression tests, I would suggest that it would be better in calculating the percentages to use the requirement in the specifications as par; this means, for example, in the transverse test, that the average result be divided by 400 lbs., the requirement of the specification. This gives a comparison between all the bricks tested, and its result is over one hundred if the bricks passed the specification.

I have rearranged this table, using only the averages obtained as above and added to this report.

You will notice that I have given the bricks a rating; this is obtained by adding the eight percentages in a horizontal line for any one brick together, and dividing by 8. This was done simply for the ease of comparison.

Respectfully submitted,

E. W. LAZELL.

SAND LIME AND CLAY PRODUCTS IN THE FORM OF BRICKS

Table of Strength Tests, Giving Average Results

A	TRANSVERSE TESTS MODULUS				COMPRESSION TESTS			
	Dry	Saturated with Water	After Freezing	After Fire and Water	Dry	Saturated with Water	After Freezing	After Fire and Water
A	728.5	443.1	454.6	71.8	4988	3458	3086	4384
B	471.1	118.1	268.1	62.7	3039	1723	1607	1743
C	436.1	389.2	340.0	122.8	8785	2327	1823	3140
D	625.9	419.6	372.0	51.2	5102	3009	2563	3864
E	809.7	896.8	439.9	51.2	5802	2802	2761	4843
F	398.8	466.0	123.4	115.2	3388	3336	3065	2851
G	1816.3	1386.3	1263.0	101.1	6285	5161	5344	5045
H	354.6	433.2	399.8	142.8	2381	2497	2286	2615
I	1079.3	593.4	754.6	93.9	2587	1709	1774	1919

Same Table Calculated to Percentages, Using the Requirements as Par

	A	B	C	D	E	F	G	H	I	Rating
A	182.1	147.7	171	28.	199.5	172.9	181.	249	166.4	
B	117.1	62.7	101	25.	121.6	86.1	96.	91	87.6	
C	108.8	129.7	128	48.	151.4	121.3	108.	179	121.7	
D	156.5	139.9	140	20.	204.0	105.4	153.	220	142.3	
E	202.4	132.1	196	20.	232.0	130.1	164.	248	161.8	
F	99.7	135.3	46.0	46.	135.5	166.8	182.	162	121.0	
G	829.0	462.0	476.0	40.	251.4	258.0	319.	288	302.9	
H	88.6	144.4	150.0	56.	95.4	124.8	135.	149	117.7	
I	269.8	197.8	284.0	37.	103.4	85.4	166.	109	148.9	

Mr. Duerr: Dr. Lazell's table gives the average strengths of all the tests made on all the bricks and I will just read you the averages so that you will get an idea. The unit for the average taken is the requirement of the specification. Therefore where the requirement is above 100, it shows that the bricks were better than the specification required:

Group A the average was 165.9
 Group B the average was 91.5
 Group C the average was 122.1
 Group D the average was 143.8
 Group E the average was 162.0
 Group F the average was 110.7
 Group G the average was 297.1
 Group H the average was 116.6
 Group I the average was 136.8

Taking all the groups together the average is 149.5. Taking the sand-lime group the average is 136.9. Taking the clay brick the average is 165.3. I would suggest that Professor Woolson be kind enough to give us a little resume of what was done, and any suggestions he has to

make on the propositions, and Dr. Lazell do the same following Professor Woolson, and then we take up the specifications as we finally agreed to.

Professor Woolson: I thought I had made my resume and I am a little surprised you should ask for it again. At the time the letter was written I did not think I would be able to be here and I went into the matter in considerable detail for that very purpose. As far as my opinion goes, based upon the report of the Underwriters' Laboratories, I think that opinion is fully expressed in the letter which your president has just read. There was one question that would need modification; and that is in how far the five samples of sand-lime brick and the four samples of clay brick correctly represented the average product of each type of brick. That is a very hard question to answer, more particularly perhaps for the clay brick than for the sand-lime brick because the varieties are greater and the territory greater. Nevertheless it seemed to me, judging from the samples, in the light of my experience of some years with a great many varieties of brick, I should say that the samples of clay brick, with one exception, were above the average sample of brick of their class, that is common brick. This brick did not enter into the proposition, although some of the brick would pass for face brick, especially the St. Louis and Chicago. They were not of the type of the high grade face brick which some clay manufacturers supply. The sand-lime brick, as stated in my letter, I think are a fair representation. In the period of some six or seven years more or less that I have been examining and testing sand-lime brick, I have found a very marked improvement in the grade of brick. It is very gratifying to me to see the class of brick that comes into the laboratory for test, to mark their increase in quality, not always in the outside appearance, but in the quality of brick as a whole. The manufacturers, due to their years of experience and to a firm determination on the part of many of you to make your product just as good as you can, are getting the qualities you ought to have and which you couldn't naturally get in the first place in starting out. The tests I think were flattering as a class, certainly they were very illuminating to the Underwriters' Laboratories. I think your President has correctly stated that they were predisposed to condemn the brick. Probably that opinion was borne in upon them by examination and experience with poor grades of sand-lime brick which were very much in evidence in various parts of the country five years ago, and they condemned the product as a whole. I know in personal conversation with the gentlemen who conducted the tests, they told me they were very much surprised to see how well sand-lime brick stood up. Unfortunately owing to their specifications being, as they admitted, too severe, the results were not as conclusive as could be desired. I think you did the right thing in facing the proposition immediately as you did, as otherwise you would be in the ban of their disapproval, and now you have placed yourself in a position where it is not to be proven that you are inferior to clay brick.

Mr. Duerr: I would like you to make one expression clear, and that is we have spoken of the severity of the test specifications. That applies only to the fire part of it, and I would like you to give us your ideas a little bit on that in detail, covering that point which you made as to what is necessary to be done to come to some definite conclusion on that point.

Professor Woolson: I will briefly describe the method employed by the laboratories to make a fire test. They had built for this particular test, a small furnace about three feet wide and four feet high and two feet deep. On one side of that furnace was simply a box and on two sides were a row of jets of gas and air coming into impinge on the opposite front of the furnace; that front was entirely open and they had a framework built which would just fit the front of the furnace. A mason built a wall of the material under test and this wall was rolled up to the front of the furnace to close the furnace and the gas and air turned on, which impinged against the front and radiated back which avoided the jets striking direct. The wall was under a fire of 1,700 degrees for one hour. That as you know is a very severe test. At the end of this hour this wall (the middle portion was the only part under test) was immediately run to one side and sixty pounds pressure steam of water twenty feet away was thrown against the wall while in a red-hot condition and held there one minute. In my experience with fire tests, there is rarely a building in which any material has to maintain a temperature of 1,700 degrees for one hour. I never saw a room that had enough material to maintain that temperature. A building may burn for a greater length of time than that but no one portion of any wall would be subjected to such a temperature. It might develop a higher temperature—up to 2,000 degrees, but the average temperature of a burning building is 1,700 degrees to 1,800 degrees. Then too, under those conditions it is extremely rare with a building that has burned for one hour, that a stream of water at a distance of only twenty feet could be played continuously on a small area for one minute while it is still red-hot. Firemen throw the stream all over the walls here and there and they are not subjected to those conditions. Of course a test must be more severe than practice, but I think that test was too severe. I don't know what would be a proper test, certainly the Underwriters' don't know. We know that test was too severe. But the test should be just right to eliminate second or at least third grade quality from first class quality. That is what a test should do.

Dr. Lazell: I report the investigations done in the laboratories of the Henry S. Spackman Engineering Company, on five samples of sand-lime brick taken from those used in the fire tests made in our presence in the Underwriters' Laboratory, in February of this year.

CHEMICAL ANALYSIS OF SAND-LIME BRICK.

Tested at the Underwriters' Laboratory in Chicago, 1908.

TABLE A.

Composition	Designation of Brick.				
	A	B	C	D	E
Sand	71.96	81.89	74.38	73.90	77.92
Soluble Silica	10.02	5.45	11.67	5.52	6.84
Alumina and Iron Oxide	1.21	.87	.85	.50	2.49
Carbonate of Lime	2.70	6.43	4.93	1.66	2.86
Hydrate of Lime	11.85	3.43	4.04	8.42	9.11
Magnesia . . . . .	.53	1.02	.33	.21	tr
Excess loss on ignition over that required for hydrate and carbonate	1.30	1.54	4.16		1.32
Total Sand and Soluble Silica	81.98	87.34	86.05	79.42	84.76
Total Lime as CaO	10.47	6.19	8.51	17.30	8.68

From these analyses you will notice that A contains a large amount of both soluble silica and lime, which means that there is present a large amount of the binding material (hydrated calcium silicate).

B contains a much smaller amount of this material, but there is present considerable lime in the form of carbon. Under the action of fire this would form quicklime, and might cause the brick to be considerably damaged.

C is comparatively high in the amount of binding material.

D contains a small amount of binding material, but contains considerable lime, present in a form other than the hydrate or carbonate. This lime was probably a combination with the silica, and was present in the sand, thus being inactive as far as the strength of the brick is concerned.

E is a well-prepared brick; the proportions of soluble silica and lime, however, are not as good as in A.

A portion of each of these bricks was decomposed by means of acid, and the fineness of sand determined.

TABLE B.

	Size of Opening m.m.	A	B	C	D	E
Per cent passing No. 20 sieve	.851	97.7	98.2	99.7	99.4	99.2
Per cent passing No. 30 sieve	.535	95.2	96.2	99.5	99.1	98.6
Per cent passing No. 40 sieve	.375	89.7	92.4	99.0	98.6	97.7
Per cent passing No. 50 sieve	.279	71.7	85.6	96.6	96.1	91.7
Per cent passing No. 60 sieve	.232	50.0	81.4	88.7	91.8	74.4
Per cent passing No. 80 sieve	.171	20.9	71.6	59.9	70.1	47.2
Per cent passing No. 100 sieve	.140	9.2	51.2	27.8	36.6	24.5
Per cent passing No. 150 sieve	.090	5.4	32.4	16.8	14.6	15.0
Per cent passing No. 200 sieve	.076	2.1	14.2	6.7	3.8	6.4
Effective size, 10 per cent finer than m.m. . . . .		.142	.074	.081	.086	.083
60 per cent finer than m.m. . . . .		.236	.158	.171	.151	.200
Uniformity co-efficient		1.66	2.06	2.11	1.75	2.41

These results show that all the bricks would be materially improved by increasing the amount of material present which would pass a 20 mesh sieve and be retained on a 60 mesh sieve, thus giving a denser brick. Other things being equal, the strength of a brick is proportionate to its density.

Of the five bricks tested, A had the best gradation of sand; B contains too much very fine material; while the other three samples resemble each other pretty closely, E being the best of the three.

It would seem from this investigation that a brick should contain at least 10 per cent of soluble silica, and that the gradation of the sand should be such as to produce the greatest density or weight per cubic foot.

Mr. Skeele: I understood that the sand-lime brick was selected by the sand-lime manufacturers.

Dr. Lazell: It was.

Mr. Skeele: The clay brick were selected by the Underwriters?

Dr. Lazell: Yes. The New York brick were selected by the John P. King Company.

Dr. Lazell: (Referred to charts.)

Dr. Lazell: The original samples of these five sand-lime bricks I brought back to Philadelphia. They were subjected to a chemical analysis and the fineness of the sand determined. The lime was dissolved out and it all passed a 100 mesh sieve. It showed two things, that the brick with the best gradation of the sand was the brick that was the densest in every case and stood the best test, and secondly that the bricks that showed the most chemical action between the lime and the sand were the best. The test demonstrated that if the brick was properly made with the right materials it passed the test in every instance and the brick that did not have the right proportions of the fine and coarse sand failed in some of the tests.

Mr. Woolson: I am very much interested in that last statement. Dr. Lazell in his first letter recommended that we drop the specific gravity tests. I have been contending for the last year that one of the important things we ought to have is a specific gravity test to determine the density and as the tests show that the densest bricks are the best brick, Dr. Lazell will have to take back what he said about specific gravity tests.

Dr. Lazell: (Referred to chart showing relative finenesses of sand.)

Mr. Duerr: The point Dr. Lazell makes there, illustrates the fact that if we grind all our sand we are making a mistake. If we grind none of it, we are making a mistake—if we are trying to get the highest efficiency. Dr. Lazell brought one point out. He determined the amount of soluble silica in his analysis; in other words, the amount of sand that entered into combination with the lime. 90 per cent of our sand, or even more in some of the brick, does not enter into combination with the lime at all. The table shows I think that the average is about 7 per cent. The sand that combines with the lime is that portion of the sand which is fine, even finer than 100 mesh. Therefore, the strongest brick

in these tests was the brick that showed 10 per cent of soluble silica or over. Those brick contained anywhere from 15 to 30 per cent of sand which would pass a 100 mesh. Therefore if we want to make a high grade brick, we want to have sufficient fine sand, I mean sand that will pass a 100 mesh so that it will combine with the lime, because your coarse sand does not combine with the lime.

You have heard the report and also an analysis of the report, and the results of the tests, the method of making the tests, etc. We are now up to the point where we want to present to the Association the specifications as made by the joint committee based upon this test. This specification is on the strength and absorption tests only. We have found from analysis of these tests that when sand-lime and clay brick (and by the way these specifications are not for the purpose of being confined to sand-lime only—they are to cover everything in the way of brick building material) in these specifications we don't have any requirements for the fire test because, as Professor Woolson stated, we haven't any data to enable us to draw specifications for a fire test, but we found on making these tests, that where brick were able to pass the other requirements, we had a right to take it for granted they passed the fire test as ordinarily required, and that applies to clay as well as sand-lime. Now it is up to the Association to determine whether the Association as a body will accept this specification, make it a part of their constitution, if you want to call it that, and that they are standing back of that, and if my thought is carried out I should say that if the Association adopts this specification, it goes further—it makes its members morally responsible to the public to make brick which will pass these specifications. In other words, a member of this Association goes out to the public and says: our Association stands for a certain quality of brick. This quality is designated by our specifications and we are selling you brick with the understanding that they are up to the specifications of this Association. In other words, I feel that the Association ought to stand for something which means good material to the public. This may be going further than the members of this Association feel that they ought to go, but that is up to the Association to determine, and I would suggest that we take this specification up clause by clause and determine whether we are willing to abide by them as they stand or whether we feel that they are too severe, whether they will pass all the conditions that we are up against—all localities I feel myself there isn't a plant in this country that can not make brick that will pass these specifications without one cent extra expense of operation.

Another point and that is that it seems to me we will have a very good talking point and talking points are what we are after when we are trying to sell brick. When we are in a poor clay brick locality, all we say is "Gentlemen, we are selling you brick under the specifications of our Association; if you want us to meet the competition of the clay brick, he must meet these specifications, and if you are willing to stand by our specifications you can force him to stand by that specification," and I think

we can soon knock out the clay brick. We will bring out the point emphatically that the Underwriters approve this, and are right with us and when you make a brick that does not come up you are putting yourself open to getting a higher rate of insurance.

Mr. Buck: Isn't it imperative for us to do that? How can we get out of it? Of course your customer will look into the insurance end of it and won't take your brick. I had an experience in that line. I sold 100,000 brick for a wholesale grocery house and someone told the manager he would have to pay a higher rate of insurance for sand-lime brick. Just that morning I received a letter from Mr. Smith saying that the Underwriters had put sand-lime brick on an equality with clay brick, and when I met the manager on the street that morning I had my reply ready.

Mr. Duerr: I might also add that there has been no disposition on the part of the sand-lime brick Association to act against the clay brick industry in any way. When we took this matter up with the Underwriters, I requested the Underwriters to invite the clay brick manufacturers in on this test, and allow them to make their own selection. They ignored us entirely. After we had started the tests and made some progress in the work I understand they were willing to come in but they were too late. Whether they are going to do anything I don't know. But there has been no disposition on our part to act unfairly with the clay men.

Mr. Holden: If this is adopted by our Association and eventually adopted by the Underwriters' Laboratories, is there any chance of it being adopted by the American Society for testing materials?

Mr. Duerr: As far as I know the American Society for testing materials hasn't done anything and I have been very anxious for them to do something and have been doing some talking in that line myself. I think Professor Woolson is in a better position to answer that question.

Mr. Woolson: I have been a member of that delinquent committee of the American Society for testing materials for two or three years. I frankly admit that they haven't done anything much. I throw the responsibility on our chairman. Mr. Page, Chief of the Government's Bureau of Highway, is the chairman and is a very busy man. However, we had a meeting of that committee in Atlantic City in June, and I consulted with Mr. Merrill, who is Chairman of the National Fire Protection Association and had charge of the laboratories in which these tests were made, asking him if he would co-operate with the American Society for Testing Materials for the adoption of standard tests for these materials and he acquiesced to the proposition of having a joint meeting and I presented that later to Mr. Page and he assured me he would take the matter up and present these letters to the other members of the Committee and would prosecute the matter so that at the coming June meeting the matter would be in shape for more intelligent discussion and the arrival at some definite conclusion. At that time all these points that have come up today had not been threshed out.

Mr. Duerr: I saw Mr. Page yesterday; I should have invited him to attend this meeting. I don't see why, in view of the fact that the Association is doing what it has done, and in view of the fact that the National Board of Fire Underwriters is recognized by the Society for Testing Materials, that we could not get them to adopt these specifications as soon as we had adopted what the Underwriters had adopted.

Mr. Woolson: I think Mr. Page was favorable to that conclusion.

Dr. Lazell: I want to submit these specifications as adopted by this meeting to our committee of the American Society for Testing Materials at our committee meeting in June.

Mr. Holden: I move we take up the adoption of the report item by item.

Mr. Jackson: (As Chairman of the Specification Committee took the chair.) The suggestion is made by Dr. Lazell that we skip the first three pages of recapitulation of the previous report, giving the picking of the samples, the description of the apparatus, and the manner of making the tests, and adopt the last page which is as follows: (Mr. Jackson reads last page of specifications.)

Mr. Duerr: I move, Mr. Chairman, we take up each item separately and pass upon it. Mr. Mellen seconded the motion. (Carried.)

Mr. Jackson (reading):

(a) Absorption (being the weight of water absorbed divided by the weight of the dry sample) shall not average higher than 20 per cent, and no sample shall exceed 25 per cent.

Mr. Smith: I would like to ask Dr. Lazell the average of samples tested.

Dr. Lazell: Clay about 17 per cent plus 14 per cent average of sand-lime 15.7 per cent absorption for twelve hours. (?)

Mr. Duerr: I think that is entirely too liberal. 15 per cent would be ample. If we can not make 15 per cent we can not make any per cent.

Mr. Jackson: I understand the Underwriters have had this up for consideration and I think their committee has agreed upon that and we don't want to change it if we can help it.

Mr. Plummer: I believe firmly that if brick is a good absorber that it will show itself in some other line. The absorption test won't cut any ice so we might as well accept their absorption test.

Dr. Lazell: Three of the sand-lime bricks went over 15 per cent. 15 per cent is too rigid for the average clay brick.

Mr. Bovy and Mr. Plummer moved and seconded the motion that item (a) be accepted. (Carried.)

Mr. Jackson (reading):

(b) The Freezing and Thawing process shall not cause a serious cracking or spalling in any of the samples tested, nor cause the disintegration of the material.

Mr. Plummer and Mr. Smith moved and seconded that motion that item (b) be accepted and it was carried.

Mr. Jackson (reading) :

(c) Pending further investigation for the purpose of developing a proper requirement for determining exact fire resisting properties, samples to be tested by the method set forth in this specification, and classified according to the merit shown under the test.

Mr. Plummer and Mr. Lippincott moved and seconded that the motion that item (c) together with the note thereto appended be adopted and the motion was carried after Mr. Jackson read the note after item (c) as follows:

The fire test specified has been demonstrated to be unsuited for the determination of the *exact* relative effect of fire on different materials of this character. It does, however, afford means of ascertaining whether or not the material tested is unduly susceptible to damage by fire.

Mr. Jackson read:

(d) Modulus of Rupture must be as follows:

For samples thoroughly dry average shall not be less than.....400
and no sample shall fall below.....325

For samples thoroughly saturated average shall not be less than....300
and no sample shall fall below.....243

For samples subjected to freezing and thawing process, average shall
not be less than265
and no sample shall fall below.....210

Mr. Smith and Mr. Duerr moved and seconded the motion that item (d) be adopted. The motion was carried.

Mr. Jackson read:

(e) The ultimate compression strength must be as follows:

For samples thoroughly dry, the average shall not be
less than2,500 lbs. per sq. in.
and no sample shall fall below.....2,000 lbs. per sq. in.

For samples thoroughly saturated the average shall
not be less than.....2,000 lbs. per sq. in.
and no sample shall fall below.....1,600 lbs. per sq. in.

For samples subjected to freezing and thawing process,
the average shall not be less than.....1,675 lbs. per sq. in.
and no sample shall fall below.....1,500 lbs. per sq. in.

Mr. Goho and Mr. Duerr moved and seconded the motion that item (e) be adopted.

Dr. Lazell: In the freezing test a change was made. The new specification required those bricks to be dried out to make them stronger. It shows the sand-lime bricks are not hurt by freezing, but the clay brick are hurt by freezing, and the freezing and thawing test is harder for the clay brick.

(The motion to adopt item (e) was voted on and carried.)

Mr. Plummer: What is to be done with this?

Mr. Jackson: This will be referred back to the committee and they will notify the Underwriters.

Mr. Plummer: I make a motion that the matter be referred back to your committee and that they submit a copy of the rules we have adopted to the Joint Committee. It was supported by Mr. Duerr. (Carried.)

Mr. Mellen: I would like to ask of Mr. Irvine just how much space you will be able to give in your paper to these specifications.

Dr. Lazell: When the Underwriters adopt this, the full specifications should be adopted, giving requirements and instructions for making tests so they will be uniform, just the same as with the standard cement specifications, and the whole thing is only fourteen pages, or about two columns of your paper.

Mr. Irvine: When this matter is in proper shape to be printed, with the signatures of this Association and its experts attached, it will give me pleasure to publish it without restriction as to space for the benefit of the trade.

Mr. Holden: I move to extend a vote of thanks to this committee.

Mr. Goho: There is one feature of the situation we can not afford to neglect. We are not yet out of the woods. This Underwriters' Association is not through with us, and I think this Association should not only thank the committee, but authorize them to proceed with the matter in hand and look after the interests of this Association with the Underwriters' Association.

Mr. Jackson: One member of that committee wants to step aside, and I want the Chair to make another appointment.

Mr. Goho: I move the committee should be authorized to guard the interests of this Association before the Board of Fire Underwriters. Mr. Bovy seconded the motion. (Carried.)

Mr. Duerr: I move that we adopt this specification as the standard specification of the Association. Mr. Carmichael seconded. (Carried.)

Mr. Duerr: Mr. Chairman, I suggest that the committee on this matter take up the matter with the National Board of Underwriters of determining where and how these tests shall be made, taking up the matter in such a way that there will be no hardship put upon the members of this Association by having these tests made at any particular point or place. That the committee, if possible, make arrangements whereby certain laboratories can be designated, these laboratories being agreeable to the joint associations for that purpose. Mr. Smith seconded the motion. (Carried.)

Mr. Duerr: I want to ask a question as to whether the motion as put by me a little while ago as to the adoption of this specification by this Association, whether this is in shape now where the members are under obligation to manufacture brick which comes up to these specifications?

Mr. Jackson: I should judge they will have to try to do it.

Dr. Lazell: We simply accept these specifications as a whole, and it is up to the individual members to come up to the standard.

Mr. Plummer: It strikes me that by the adoption of this standard by the Board of Underwriters for the brick products of the country, the moment the Underwriters attack a sand-lime product we can insist that they shall not pass a clay product without the same test. There will be no trouble in the sand business. The difficulty that may arise will be in the clay business, but that won't be our funeral.

Mr. Holden: We don't want to forget that we are brick men and are interested in brick. The issue is being drawn between concrete and brick. I am more interested in brick than concrete. We oughtn't to draw the issue too closely with the clay brick man. We may need his co-operation in a very short time. One officer of the clay brick association expresses the sentiment that the clay brick man must not fight the sand-lime brick man. We should not feel that the clay brick man is our enemy.

Mr. Jackson: We don't want to fight or oppose the clay brick manufacturers in any way. We don't want to give the impression that we are trying to be unfair to the clay brick man at all.

Mr. Carmichael: Mr. Jackson said quite a while ago we asked the clay brick man to co-operate with us in everything we are taking up, which I think shows the sentiment of this meeting clearly.

Mr. Duerr: I do not think there has been any disposition to knock any material. We invited the clay man in with us. There has been no disposition to fight the clay man. There is simply a disposition to take the stand and position that is due us and have them recognize us where we belong and we recognize them, and that applies to all materials. I don't believe that any man ever sold a product because he knocked somebody's else product. A product will take its own position where it belongs sooner or later, and knocking will not help anybody.

Professor Woolson: I think some of you might take into consideration one thing you have done this afternoon which is highly to the advantage of the clay brick man, and if any question should come up you can answer criticism of that kind by saying you have made a very liberal absorption test, which is necessary to the clay brick people and is not necessary to the sand-lime product.

Mr. Duerr: I want to put it up to the Association whether we should try to finish or whether we should get our luncheon and get back as quickly as possible in order to finish up as early as possible, as we have been invited very kindly by the Cranford Paving Company and Mr. Kwaikowski to visit their plant, which is in this city. I think it is well worth our while to visit that plant, and they wish us to do so as near before four o'clock as possible. I don't think we have more than an hour or three-quarters hour's business before us.

(It was moved and carried that the Association finish its business before luncheon.)

Mr. Goho submitted the report of the Auditing Committee. He said: The Auditing Committee has examined the statements and vouchers of the Secretary showing receipts, disbursements, and unpaid accounts for 1908, and finds the same to be correct.

Mr. Jackson: I move that the report of this committee be received, placed on the minutes and the recommendations be adopted. Seconded by Mr. Buck. (Carried.)

Mr. Jackson: I would like to extend an invitation to the members of this Association to hold the next year's meeting in Saginaw. It may be a little out of the way, but it reaches the Canadian people, and I will guarantee a well furnished and nice room for holding the meetings, and we will try and entertain you if you will come to Saginaw. We would like to extend an invitation to the members of this Association to have the next meeting held in Saginaw.

Mr. Duerr: In behalf of the Association, I will thank you, Mr. Jackson. I am sure if we went to Saginaw we would have a corking good time.

We have one important matter in the way of new business we haven't considered yet, and that is what we are to do about the last year's proceedings, this year's proceedings and the report of the Underwriters and specifications as adopted. In regard to the proceedings, I would like to say that to my mind they are valuable, extremely valuable, in order to be a matter of record so that new members coming in can go over the work of the Association and get what knowledge they can out of it, and frequently old members can brush up on things they have forgotten that may be of help to them. In regard to the report of the Underwriters, that information is extremely valuable. It is an authentic comparative result of tests of two products. There is information there, I will venture to say, there isn't another bureau in the country has anything like it. The value of it to you as far as the outside world is concerned is that you have something of record that when you are questioned as to the relative merits of material you have something to say. In regard to the specifications, we have adopted a specification. We should be in a position to give this specification broadcast—if you think that is the proper thing to do—to let everybody with whom you are doing business know what you are doing. These are three separate propositions. I think we ought to consider and pass on each one.

Mr. Plummer: Relative to the publication of our proceedings, I think that the publishing of the proceedings of the Convention as a whole is a waste of printed matter as far as a good deal of the matter is concerned. If you will publish the gist of it and refer to an editing committee who can fix it, it might be of value.

Mr. Duerr: We should appoint a committee to take up the publication and editing and also how they are going to finance it.

Mr. Jackson: I move that the matter be referred to the Secretary. Seconded by Mr. Smith. (Carried.)

Mr. Duerr: Will anyone make a motion about the Underwriters' report?

Mr. Skeele: I move we put this question to the Executive Committee. Seconded by Mr. Smith. (Carried.)

Mr. Smith submitted the report of the Nomination Committee.

Mr. Jackson: I move the report be adopted and the retiring President cast a ballot for the names as recommended. We extend a vote of thanks to Mr. Duerr for the able work he has done. I know he has done a lot of work, especially on this insurance matter, and I make a motion that we extend a vote of thanks to Mr. Duerr. Mr. Bovy seconded the motion and a rising vote of thanks was taken and unanimously carried.

Mr. Duerr: It was moved and seconded that the report of the Committee on Nominations be adopted and the retiring President cast a vote in favor of the election of the officers. (Carried.)

Mr. Goho, President.

Mr. Lippincott, Vice-President.

Mr. Irvine, Secretary.

Mr. Plummer, Treasurer.

Mr. Goho took the chair.

Mr. Goho: I would like very much to have arisen in my place and declined with thanks, but I realize in an organization of this character that the man who stands up and declines with thanks isn't bearing his share of the burden. I want to do all I can to make this Association a success during the coming year. I realize the President can not do much unless he has the support of each individual member. The thing that has appealed most to me is from the manufacturing side of the proposition. Referring merely to the affairs of the Association proper, it has been the fact that we have not put our finances in the shape in which they ought to be, and with your co-operation I think that is one of the first things we want to tackle. This Association can not live, it can not do good work, it can not be useful to its members unless we have back of us a treasury that will enable us to spend the amount of money actually necessary in order to carry on the work. We have a deficiency of \$1,400. If the members come up with their assessment of \$15—if at the next meeting of the Association the amendment for \$25 annual dues be passed—we ought to be able to meet those bills. We are expected to meet them and we ought not to slide back. I want to impress upon you that this moderate assessment should be met cheerfully and promptly. That is the first thing, and the President can not do a thing towards removing it. It is up to you. I thank you for the honor you have given me in electing me President of this Association, and I will try to fulfill your trust and make this Association a success.

Mr. Irvine: At the present moment there are just six members of this Association that have paid their dues. The experience last year in the Association work was that seventy-five per cent of those had not paid them up to the first of October. The entire year was one of dragging along without a particle of encouragement in any way, shape or

form, and if the gentlemen can see the importance of having Mr. Plummer's treasury loaded with a little of the necessary oil of gladness, it will help a whole lot to carry this burden.

Mr. Plummer: After listening to the remarks of the President, I see that he has echoed my sentiments exactly—that is getting the financial end of the Association in proper condition. The truth of the matter is that the Treasurer's duties are very arduous. I should have told you that I ought to have a raise in salary, but I consent to serve one more year.

Mr. Duerr: I wish to make a few remarks. There is no question but that it is very hard for any official of any association to do any work if the members don't help. I intend as a member of this Association and as a layman to do everything that is in my power to help the officers of this Association and to meet them in every respect in everything they ask me to do, and I think my fellow lay members should go away with the same spirit. We must recognize the fact that anyone of us can not accomplish one iota of what has been accomplished by this Association. What standing would any of us have had in the South when the Underwriters practically put them out of business by discriminating against them on the question of insurance. As an Association, however, we were recognized immediately. And this Association does every member a lot of good indirectly even though not through direct sales. Everything done in the Association is done for the benefit of all.

Mr. Jackson: I would suggest that the committee that was appointed to meet Mr. Taylor shall get together and see Mr. Taylor right away.

I would voice everything that Mr. Duerr has said regarding his willingness to help the Association. I only belong to eighteen boards of directors. They all want me to help, but at no time have I refused to devote time and money towards helping this Association. I feel that we can not accomplish the purpose that we started out with unless we get the Association all together. We ought to get the assistance of every member of this Association, no matter how busy they are elsewhere. Get up energy and don't have a sleepy feeling. We ought to make it our special duty right away to get after new members and tell them it is necessary to all work together. We must both give financial and moral support and help the President.

Mr. Goho appointed the following Executive Committee: Mr. Duerr, Eastern District; Mr. Skeele, Southern District; Mr. Jackson, Central District; Mr. Mellen, Western District.

Meeting adjourned.

PROCEEDINGS
OF
FOURTH ANNUAL CONVENTION
(Abridged Stenographic Report.)
OF THE
NATIONAL ASSOCIATION OF MANUFACTURERS
OF
SAND-LIME PRODUCTS

H. O. DUERR, President
HARRY De JOANNIS, Secretary

CHITTENDEN HOTEL, COLUMBUS, OHIO

DECEMBER 4, 5, 6, 1907

FOURTH ANNUAL CONVENTION

National Association of Manufacturers of Sand-Lime Products.

December 4, 1907, 11 A. M.

The Convention opened with the address of President H. O. Duerr, as follows:

THE PRESIDENT'S ADDRESS.

It is with pleasure that I welcome you to our fourth annual meeting. We are to be congratulated on so good an attendance; it at least indicates that there was some cash to be had from the banks in your several communities. I trust that we, neither as individuals nor as an association, are subject to the suspicion and lack of confidence that has placed so grand and prosperous a country as ours in so conspicuously ridiculous, not to say dangerous, position as to be almost panicky.

How easy it is to forgive ourselves the mistakes made in sand-lime productions when we hear of old, tried financiers, men of science and of letters, crying ruin, because we have a man at the head of this nation who knows right from wrong—who can, and does, assert it. I can only pray that this association at this meeting, and at all other times, may emulate the great ideals which our esteemed President lives up to.

I do not wish to be understood as being optimistic or pessimistic. I have considered the pros and cons of the sand-lime products industry in all its phases so many times that I am becoming more and more conservative over it. Notwithstanding that conservatism, I believe today in the future of the sand-lime products industry just as firmly as I do in the future of our nation.

As we are leaving behind us a period of frenzied finance, a period of irresponsible, questionable business transactions, and moving into a new era of truth and integrity, so also is the sand-lime products industry bound to pass through a transition period—from the period of irresponsible promotion, a period of unreliable production, to a period of greater intelligence and more thoroughness.

As we look back over the last five years in this industry we can not help but feel that we have been in a very chaotic state. The time seems ripe for us to take stock. Why? Because of the failures, and because of the necessity of the future of this business. We must make the public believe in us; and to make the public believe in us we must first believe in ourselves. Just so long as we are producing a material indifferently good, when in the depths of our own hearts and conscience we know we can do better, just so long we can not obtain the recognition to which we are entitled.

Gentlemen, you know that there is not one of us who can not make a better article than he is now producing, at no greater cost, if he will make the effort.

If this association is to continue for any good purpose whatsoever, and accomplish anything, it must stand unqualifiedly for truth. And when I say truth I mean the truth of the good worth of its materials, for which this organization stands.

Let us briefly glance over the history of the past few years, since the advent of this industry, and note what has been done.

From the consular reports we hear that a great invention has been discovered in Germany which is to revolutionize the building industry in many communities. This discovery has been commercialized and is showing wonderful success. Next we hear of the organization of certain companies being promoted for the purpose of manufacturing this wonderful building material under rights which have been given by dispensation; and if you wish to reach that great goal of your ambition it is incumbent upon you to obtain, immediately, a franchise. Unless you grasp the opportunity at once your neighbor is going to take it away from you, and consequently you soon find yourself possessed of the right to manufacture this building material under the special dispensation which no one else in your community can have. Your opportunities are without limit. You have the world at your feet. The result, in cold facts, is that the franchise for which you paid good hard cash is worthless, because you find that there are other franchises, equally as good, being given away with a package of machinery, for which you paid good money. You find yourself possessed of a badly designed plant, with machinery wholly inadequate for the purpose intended. On the top of all this you have gone into a business which you are led to believe required no knowledge, and you find yourself entirely out of place, without knowledge or cash. What has been the result? Failure, discouragement, heartaches, backaches, even hardships for many, with but few successes.

The surprise to me is that there have been so many successes. The fault can not be placed upon any one thing, but upon everything.

Can we remedy the situation? I say, yes. What shall we do? First as individuals, second as an association, let us firmly make up our minds that we are going to make the best possible products that can be made. When we have done that we will have the public with us. Have we the appliances necessary to do this? Again I say, yes. There are a number of good reliable concerns, some members of this association, who are capable of producing, and who do produce, good machinery. Do not let us tempt them, however, to neglect our interests by inadequate compensation. Let us demand the best from them and pay the best prices.

Again let me reiterate that there is not one of us who can not make better brick at no additional expense. This may seem like a broad assertion, but I believe that every one of us can prove it to our own satisfaction if we make the effort.

The public is going to demand better results from us. I do not mean to say that they are going to single us out, but the demand is becoming general in all lines, and we can not expect to be overlooked.

Last summer one of our members addressed a letter to the association, stating that he was being discriminated against by the Board of Fire Underwriters, in that they were placing the highest rate of insurance upon buildings built with his brick, classing the brick in the same class as concrete block; which meant, practically, in the same class as a frame building.

And, by the way, I only recently saw an article in one of the cement journals headed:

"Methods that contribute to success, and some of the causes of failure. Manufacturers beginning to realize that experience is essential to success."

The article under this heading is prefaced by the following remarks of the editor:

"In publishing the following communications on the subject of concrete block it is with the conviction that the time has arrived when the manufacturer must discriminate between good and bad methods if the industry is to prosper. Excellent block, answering every structural requirement, have been made in the past and are being manufactured today. On the other hand, there have been many failures.

"From time to time *Cement Age* has published communications from experts, who have explained the secret of making good block. Some have been advocates of the so-called dry or hand-tamped mix, and others have had equal success with the hydraulic process. All agree, however, that to achieve success there must be the knowledge or experience required in any other industry.

"It is safe to say that in undertaking the business, many blockmakers were chiefly influenced by the conviction that it required no previous experience and could be intrusted to workmen of ordinary intelligence. Here and there very intelligent and capable men have failed to master the secret of making good block, and, being too honest to deal in an inferior product, they have abandoned the enterprise. It is with the hope of assisting blockmakers of this class that we publish the following letters, one from J. F. Murray, manager of the Pocatello Pressed Stone Company, Idaho, stating why he regards the concrete block as a failure, and replies thereto by Messrs. H. H. Rice, of Denver and Noyes F. Palmer of Brooklyn, both experts on the subject of block and among the pioneers of the industry."

The subject is too lengthy for us to go into in detail. It is sufficient for us to try to benefit by their experience, if it is possible.

To get back to the subject in hand: After more or less correspondence a committee was appointed to take up the matter with the National Board of Fire Underwriters, Chicago. A meeting was arranged by the secretary and was attended by a committee of your association.

The reply to our statement that we felt we were being discriminated against was, "We know nothing about your materials; the matter has never been officially before us, and consequently we placed the material on a rating where we felt we were safe until such time as it had been demonstrated to us that an injustice had been done," to which your committee replied that many tests had been made by laboratories and eminent experts. The question was then asked, "That may be true in individual cases; but do you mean to tell us that all your plants are making uniformly good brick?" I regret to say that your committee was forced to admit that such was not the case. After considerable further discussion, and correspondence it was agreed to frame specifications which would meet the requirements of a good building material and a good fire-resistive material, these specifications to be submitted for joint adoption and such plants as made a product which came up to these requirements were to be indorsed by the National Board of Fire Underwriters. This indorsement entitled the owner of such buildings as were built of such indorsed brick to receive the minimum rate of insurance. I trust that, after careful consideration, you will see fit to act formally upon them. It behooves every member of this association to make brick which will pass these specifications. In my opinion there can be no higher incentive for every manufacturer to make good brick.

I trust you will forgive me for dwelling at such length upon this particular phase of the situation. My excuse is that I feel the situation keenly, for I can see no longer need of our traveling blindly.

All of our meetings have been delightfully full of enthusiasm and good work, but I am afraid that before we start for home many of us

will have lost that enthusiasm. This condition does not help us. I have given much thought to what might be done to keep up the interest and to continue the work throughout the year, and if I may be permitted to make a suggestion I would like to ask the association before we adjourn this year to consider the dividing of the territory, which the association covers, into sections, each section having an executive official who shall call meetings of his section quarterly, or at such periods as may be thought best, and if the members of these sections are unable to attend the national meeting, to send one or more representatives to the national meeting, who can report the results to the sections at an early day.

Too much work for the individual good of our members can not be done at the present time. We are in a critical period in our national business affairs. We have a right to expect a period of more or less business depression, although we hope to the contrary. It is a time when we must all curtail every possible unnecessary expenditure, when we must enforce economy. And what greater curtailment can we make, what better economy, than to put our plants on a good, steady, daily output of ultimate capacity? And how can we better accomplish this than by knowing the achievements of our successful neighbor, emulating his results by adopting his methods? Therefore, let us enter into the proper spirit of this meeting and put into practice throughout the year the benefits derived. Let us stand together and, standing, uphold the best methods.

Mr. Jackson: I would like to see that part of your report adopted dividing the field into territories. I make a motion that you appoint a committee of three to look into the matter and report later. They are to see the number of territories that we want to divide the Atlantic States and Canada into, and how it shall be divided. Seconded by Mr. Smith, of North Carolina. (Carried.)

The President: Mr. de Joannis, we would be delighted to hear from you.

REPORT OF THE SECRETARY.

The membership of the National Association of Manufacturers of Sand-Lime Products in December, 1906, counting only the manufacturers of sand-lime products and of machinery and supplies for the establishment and carrying on of their enterprise, was fifty-two. This number did not represent the rated membership of the association, which was enlarged by the names of trade journals and others to whom privileges of membership without dues had been extended. Such membership was suspended at our last meeting, and the actual paid-up membership of this association today composed, with but one or two exceptions, of companies and persons vitally interested in the welfare of the industry is seventy. This numerical addition should be gratifying to all of you.

During the secretarial term of office over 2,000 letters have been sent out; 2,900 copies of the booklet entitled "Sand-Lime Products: Their Qualities and Uses" were sold and 607 copies were distributed in missionary work among architects, contractors, Government officials and insurance representatives, as the needs of such work became manifest.

I would recommend that future booklets for distribution be made the same size as the last, and that in them the names of members of the association and of other manufacturers of sand-lime products be omitted, so as to better serve the purposes of distribution for those purchasing them. Such a list was of value in the early stages of our industry to convince the architect that the product was extensively manufactured.

It had this drawback, however, that it opened an avenue for the architect to deal with different manufacturers in an endeavor to secure an abatement of price. For this reason several members of our association did not feel it to their interest to purchase copies of the present booklet. In order to serve the purposes of all, therefore, this recommendation is made.

It is with pleasure that I acknowledge the loyal support of this association and of several of the members, both new and old, during my term of secretaryship. I also desire to publicly thank those who have contributed to this program as they volunteered at first call and gave of their time and knowledge freely and without urging.

According to the latest figures there are 115 plants in actual operation. The most important event of the twelve months past has been the attitude of certain insurance companies to our products. Owing to a ruling of the Southeastern Tariff Association, Atlanta, Ga., which placed sand-lime products in a class with concrete products and discriminated against them in favor of clay brick, the insurance on buildings constructed of sand-lime products was made more than double that of clay-brick construction. Such ruling affected the sand-lime brick industry in five states and there was a serious promise of this ruling being adopted by other tariff associations. F. H. Smith, of Wilmington, N. C., wrote to your secretary, and, as a result of letters exchanged between President Duerr, F. H. Smith and the secretary, a committee was appointed to meet in Chicago to discuss the matter with the committee of the National Fire Protection Association. The committee of the National Association of Manufacturers of Sand-Lime Products consisted of H. O. Duerr, L. S. Anderson, F. H. Smith, Adolf Van Spanje and H. de Joannis.

It may be well to explain in a few words the relationship which exists between the Underwriters' Laboratories, the National Fire Protection Association and the different tariff associations. The National Fire Protection Association is composed for the most part of tariff associations and other people interested in insurance and fire-protective matters. The National Fire Protection Association has its tests performed by the Underwriters' Laboratories. The findings of the Underwriters' Laboratories in all tests are accepted by the National Fire Protection Association as a base for its rulings, and its rulings form the base for the individual rulings of the associations which are members of the National Fire Protection Association. The National Fire Protection has no authority to compel any of its members to accept its rulings and they are left free in their individual actions, but the probabilities always are that the joint example of the Underwriters' Laboratories and the National Fire Protection Association strongly influences and determines the individual actions of the tariff associations.

The Southeastern Tariff Association stated to us through its representative, Fred E. MacKnight, that they ruled sand-lime products to be in the same class as concrete hollow block because they had no reliable information as to the nature of sand-lime products and their fire-resistance, and their ruling, therefore, was on the safe side. When attention was called to the fact that tests had been made by Prof. Ira H. Woolson and others, showing the value of sand-lime products as a fire-resistant, the Southeastern Tariff Association declared that though these tests were valuable it was not prepared to accept them as final, but was prepared to give attention to the result of tests made by the Underwriters' Laboratories, which was their recognized medium of testing. All the other associations will take the same stand, and hence our members will understand why it was necessary for us to meet in Chicago and take up the matter with the fountain head.

At the meeting already referred to, on July 11, we were received most courteously by the committee of the National Fire Protection As-

sociation. At the request of the chairman, Mr. Henley, Mr. Duerr presented our side of the case and our complaint at the unjust discrimination which had been made. The presence of Mr. Duerr at this meeting was invaluable. Mr. Duerr was fortified by a number of photographs showing tests on different stones and sand-lime products, which conclusively demonstrated the superiority of the latter. A number of questions were put to us by the different members of the committee, to which Mr. Duerr and F. H. Smith made satisfactory reply. These questions involved a number of matters. The questions were in most cases directed by Mr. Merrill, manager of the Underwriters' Laboratories and secretary of the National Fire Protection Association. The information given in answer to these questions covered the extent of the industry; the number of plants; amount of capital invested in the aggregate and in the segregate; the differentiation in methods of manufacture between sand-lime brick and concrete hollow block, showing the chemical and mechanical differences; the superiority as regards uniformity of product of the sand-lime brick to clay brick; the importance of the modulus of rupture as compared with the compression test, and the temperatures to which sand-lime brick have been subjected.

As a result of this meeting the National Fire Protection Association then made the proposition that two committees be appointed, one by the National Fire Protection Association and the other by the National Association of Manufacturers of Sand-Lime Products, to arrange for a series of tests, to be made on sand-lime products by the Underwriters' Laboratories, the manner and extent of these tests to be decided upon by the two committees. The National Fire Protection Association offered to stand half the cost of such tests. This was agreed upon, and the National Fire Protection Association appointed for its committee E. T. Cairns, of New York, W. C. Robinson, of Chicago, and H. C. Henley, of St. Louis. The committee appointed to represent our association was composed of H. O. Duerr, Adolf Van Spanje and J. L. Jackson. Mr. Jackson was notified immediately by your secretary and Mr. Merrill was notified by mail of the membership of our committee.

Several subsidiary meetings were held in Chicago between the representatives of the Underwriters' Laboratories and our association, the evolving of satisfactory specifications, under which the tests should be conducted, being the object. This work accomplished, copies of the suggested specifications were furnished by the courtesy of the Underwriters' Laboratories and forwarded by the secretary of this association to the members of the insurance committee. By mutual agreement a final meeting for the ratification of the specifications was then called on December 2 at Chicago, so that a report could be presented at this meeting.

On December 2, your committee, composed of H. O. Duerr, J. L. Jackson, Adolf Van Spanje and the secretary, H. de Joannis, met at the Underwriters' Laboratories, whose representatives were W. C. Robinson and W. H. Merrill, Jr., Mr. Henley, the chairman of the Underwriters' committee, was unavoidably detained, as was also Mr. Cairns of New York City. The meeting began promptly at 10:15 a. m. and the two committees went over the suggested test specifications for building materials in the form of brick, step by step and clause by clause. A presentation of the specification was finally revised and approved by both committees and will subsequently be given you at a later session of this convention by our insurance committee, so it is unnecessary for me to do any more than mention that the meeting took the whole day and almost every paragraph of the specifications under consideration evolved an interesting discussion.

I would urge upon the members of this association the keenest attention to the report of our insurance committee. It is the thin edge

of the wedge for the raising of the quality of building materials throughout this continent. I am absolutely confident that no better set of tentative specifications has yet been presented to the American public. Throughout these deliberations it has been the aim of both committees to prepare such specifications that comparative results may be obtained from every series of tests made based upon them. The great disadvantage of previous specifications has been that they have been made under different conditions, so that their entire value has been lost, each one hitherto having had to work out his own problem unaided. In this regard the specifications to be presented to you possess superior merit. Time, of course, alone can test their final accuracy, but the maintaining of similar conditions under all tests will insure definite results.

The President: We will hear the report of the Treasurer, Mr. King.

Treasurer King reported in detail the collections and expenditures of the fiscal year, showing that all of the moneys of the Association had been expended over the vouchers issued by the Secretary, with the President's signature.

Mr. Jackson: I move that the reports of the Secretary and Treasurer be received as parts of our minutes, and that we extend a vote of thanks to the Secretary and Treasurer for the able manner in which they have handled this matter for the last year. They make a very good showing. Seconded by Mr. Squier. (Carried.)

The President: As there is nothing further before this session, before we adjourn I wish to appoint the following committees: Committee to divide the country into sections will be Messrs. Jackson, Penfield and F. H. Smith. The Committee on Resolutions, Messrs. de Joannis, Plummer and Carmichael. Committee on Nominations, Messrs. Squier, Moroney and Irvine.

Adjourned to 2:30 p. m.

December 4, 1907, 2:30 P. M.

The President: The first thing on the program is a paper by Mr. J. Harry Allan, of the Winchester Granite Brick Co., Winchester, Ky.: "The Essential Conditions of Manufacture for the Production of a Uniform Sand-Lime Product."

J. Harry Allan: Mr. President, Gentlemen of the Convention: I was somewhat perplexed when I came here to know just how to treat this matter. If you would read the topic that our Secretary has assigned to me, you will notice that it is very long-worded; and if I were to talk as long as it is worded I fear that you would all be tired out. So I asked him, down in the dining room just now, how long he expected me to talk. He said, "anywhere from ten minutes to ten hours." So you see, I have considerable latitude; and if you get tired, tell me.

But to the essentials of the manufacture of sand-lime brick. It goes without saying that the first thing, or the first two things that we have, are sand and lime. We have to know whether or not our sands are adapted to the making of brick. Have your sands too much loam in them; has it too much foreign matter in it; or is there any other part about it that will prevent you from making a uniformly good product? We want to emphasize the fact that we must all make a better product.

Now, then, all of the physical conditions of the sand have to be looked into and be sure that they are right. And each one of us has to work out our own conditions.

Next, the lime. We use lump lime; and we grind it up in a machine that pulverizes it all to not less than the size of a grain of corn. Now then, when that lime is too slow we get a very bad product. If it comes to us dark, it is bad for us. It has got to come to us white; and when we put it under the warm water it has to open up like a flower if we get a uniform product.

When we have the lime and the sand in their proper conditions, the next condition that we come to is the machinery; for all of it after that is up to the machine man.

Now, then, some of your machines would not suit our product, our sand, or our lime, at all, while it might be excellent for somebody else; so then we have to try out and see whether or not the machines that you present to us will satisfy the conditions that are necessary to make a uniform product with us.

First, then, having our sand and our lime; we come to the measuring machine to get the proper proportion. The thing is up to the machine people to prepare a machine that will weigh the lime and measure sand so that at all times we may have a uniform measuring. So far, I have not learned of any machine that will do this.

The next step would be your grinder, or your mixer; and the proper tempering of your material. Do you get it uniformly tempered? Does it go to the sand bin in such shape that the lime is all taken up and incorporated into the sand, ground finely, so that your brick will show an even flour all the way through? If not, you will not have a uniform product.

The next thing, then, that we have to take up is the press. Now here is a diversity of opinion. How is it going to be done? Are your brick going to be pressed evenly, densely and perfectly true? Are you sometimes going to have a brick that is from a sixteenth to an eighth thicker than the next turn? Are you going to have your man at the wheel turn down or up, whichever he may think is needed, and get your material in right? Are your brick delivered with good edges? If the material is a little bit coarse, it's impossible; if ground to a flour you do fairly well. The condition of the liners is an important part in obtaining good results.

Then, next, comes the steaming. Gradual admission of steam to cylinders and when full pressure is reached, a constant maintenance of pressure for specified time will complete the operation and good hard brick should be the result.

Now I think these are what I would term the essentials in a general way. The program covers most of the points that I have taken up, that will be dealt with in detail; and I hope that we may each one stand ready at all times to do our very utmost to make a uniform product in our district; so that the sand-lime brick may not suffer at the hands of some man who is careless.

Now then, I wish that I was able to take part in all of the discussions that will go on here; because I am just thoroughly wrapped up in the sand-lime brick. It has fascinated me. I never got hold of anything in my life that has fascinated me like it. I have visited other plants; I have written and talked; and I am going to keep on, if I keep my health and try to learn everything that is to be learned about sand-lime brick and how to make it so that it will be uniformly good right straight through. If all of us work with that end, I believe that there is big success in front of us. I thank you. (Applause.)

The President: Mr. Allan evidently has made some good brick. The next paper is by Mr. J. L. Jackson, "The Power Plant."

Mr. Jackson: Mr. President and Members of the Association: The power plant for the brick plant should be treated about the same as a power plant for any other manufacturing institution. You want to consider what kind of power would be the best, both regarding your steam (that is, for hardening the brick) and the motive power (steam or gas engine, or electricity).

Now the power plant; speaking of boilers, I would believe and candidly think that a well constructed tubular boiler, built after rules by some responsible insurance company like the Hartford Fidelity and Casualty Co., well set and installed, with a heater—some heater that is accessible and can be easily cleaned, something on the type of a pan heater that will take so much of the exhaust as is necessary to heat that water or bring it up to the boiling point. The water can be taken from a well, or whatever sort of supply you have; pumped with the ordinary duplex power pump; put into a tank that the water can be used around your plant and at the same time supply or run by gravity into your heater. Then you want a hot water pump at the other end of your heater that will take the hot water and pump it into your boiler. It would be also a good plan to have in reserve an injector, in case any thing happens to your pump, so that you could take your water right direct from your well or your stream or wherever you get your water supply. It is not a good policy to depend upon one source of supply entirely in a power plant.

The Heater. If you get a pipe heater, or any heater that is hard to keep clean, your engineer will neglect it. If he has a pan heater, if he does his own firing—with one man to help him; they can take the top of

the heater off, take out those pans, remove the scale and dirt, put the pans back again and start up the plant in two or three hours, and have a clean heater which will remove most of the impurities in the water.

A boiler plant, if it is one boiler or two boilers or a number of boilers that you have—should be well taken care of. I believe in insurance: have the boiler inspected at least twice a year internally and twice a year externally. It protects you from any damage suits in case of an accident; and at the same time it puts your engineer and firemen who have charge of the machinery on their guard. If the boiler is kept clean and the boiler insurance representative inspects it thoroughly, they will make report and you can then have your boiler taken care of. If it has scale, and it is allowed to gather on the sheet, it will cause bag and rupture or blister. The superintendent himself should see that the boiler is kept clean.

Your engines should be kept up. If there is any part of your engine, or your pump, or your heater that wants fixing, it should be attended to before your man leaves at night. Don't put it off until Sunday; have it fixed up that night, so that you don't have to shut down your plant the next day. If for any cause or other your pump, or boiler, or engine—any part of the plant—is shut down for a half hour, it means a carload of brick; and that also applies to the entire power plant: that is, your transmission—your belting.

Now around a great many plants that I have visited, there has been much time lost in transmission. A pulley gets loose on the shaft, or your belt lacing breaks and you shut your plant down right in the midst of the running. The men stand around; they won't even lend a hand to lace that belt. That does not reflect very good care either in the man who has charge of your machinery, or in your superintendent. That also would apply to all the balance of your machinery. It is essential that machinery in a brick plant be kept in repair; so that you can get ten hours' work out of it. The machinery is usually put in charge of an irresponsible man, or else a man who is practical, and he is too lazy to look after it, and he puts it in care of some other man who don't look after it; and you don't get results.

I have had some experience in water tube boilers; but for this particular type of apparatus I wouldn't recommend them. I would say that the ordinary tubular boiler is the best adapted for brick plants, on account of the water. You usually have poor water, and have more trouble with the boiler than probably any other part of the power plant.

The President: How about the type of engine?

Mr. Jackson: A plain slide-valve engine. You don't use so much power; most of the steam going through the engine is taken up by the heater. You want a good feed water heater. If you get a high-priced engine, it requires a high priced engineer that won't fire his own boiler; but if you get a plain slide-valve engine with a throttling governor and as near fool-proof as you can get it, the man who runs that engine will do his own firing. Such is my experience.

Mr. Plummer: I don't know whether all of the other manufacturers have discovered it; but there is a little trick that we have discovered in connection with the cleaning of our boilers. We usually clean boilers of a Sunday; and we have discovered that by using our steam cylinder—we have but one boiler, consequently we have no steam when the boiler is blown off—we discovered that by closing the valves to our drums after

the brick had been properly steamed, it gives us ample steam to work our steam pump and wash our boiler thoroughly—pump our boiler up and still have perhaps twenty or thirty pounds pressure; and also use that steam for heating our plant in cold weather.

The President: I was particularly impressed with what Mr. Plummer said about the use of steam from the cylinder; and I think it would be a very good idea if we all buttonhole him after the meeting and get some details from him.

Adjourned to 9:30 a. m.

December 5, 1907, 9:30 A. M.

The President: I hope you all had a good night's rest and are ready for business. For the benefit of those who were not here yesterday, I would suggest that we want to make this meeting just as active as we possibly can in every respect. We want to get in all the meat that we can, and after the meeting of last evening one or two gentlemen said to me that there were a number of points brought up that were of vital interest to them, "and were on the point several times of getting up and saying something." Don't get on the point, but get up and say it; because if there is any thing that you want to know, that is what we are here for—to ventilate ourselves; and let us do it. We want to cut out any thing that is not of importance and get down to the meat of every thing that we possibly can.

The next paper on the program is by Mr. John L. Jackson, of Saginaw, Mich. It is on the "Advanced Methods of Cost-Keeping."

ADVANCED METHODS OF COST KEEPING.

BY JOHN L. JACKSON, SAGINAW, MICH.

With the rapid development of the modern factory system, there has arisen a need for regulations which would not have had application at a time when production was carried on under a comparatively simple industrial organization. The extent to which, by aid of machinery, the specialization of labor is now carried, generally involves the passing of an article through as many hands or machines as there are processes in its production, and renders a further extension of routine and registration necessary. A simple form of accountancy sufficed to ascertain the cost under manual labor of working up material or producing an article under the simple system of hand work. The introduction of steam and machinery and the establishment of large factories where numbers of persons co-operate through the division of labor in the production of articles of consumption, has changed the industrial conditions. Under these altered conditions employers find it economical to adopt methods of supervision and of registration which at first view make production more costly, but the advantages of the combination of labor (of each workman confining himself to one process, and that always the one for which he is best fitted) are so great that the expenses of the necessary organization are insignificant in comparison. Experience has shown that wherever the magnitude of the operations renders it practicable, every further extension of this principle of specialization results in spite of the increased expense of administration. The legislation with regard to factories regulating the employment of boys or young men and their hours of labor as well as providing for their health and safety, affords but one of the many indications of the universality and complexity of the methods of organized production which now obtain. Although this change in our industrial arrangements has already been fraught with many far reaching consequences, both materially and morally, it has been of

comparatively recent growth, probably within the course of a little more than a quarter of a century; under these circumstances, it is perhaps not surprising that systems of regulating the intricate affairs pertaining to a factory have hitherto been determined entirely by practical experience. Although the term "cost accounts" may be familiar and its meaning sufficiently evident to persons acquainted with the manufacturing business, or experienced in any operations requiring records to be kept of materials, plant, stock, etc., it is not infrequently assumed even by accountants that the ordinary commercial method of bookkeeping by double entry, without the special subsidiary books which every trade demands, suffices for every kind of business. The fundamental principles applicable to accounts necessarily hold good throughout all the branches of bookkeeping, but many manufacturing plants or factories involve in addition to the mercantile transactions familiar to everyone acquainted with the routine of an office, extensive operations of which employment of labor and payment of wages, the purchase of raw materials and conversion of same into manufactured or finished stock, are but some of the outward manifestations; and for their proper registration, special methods of bookkeeping have to be devised. In the case of manufacturing firms, the operations referred to call for careful analysis of expenditure, sometimes necessitating the storage of large quantities of various kinds of raw material, and the additional storage of the manufactured product to a considerable extent, as well as the manufacture, purchase or erection, and gradual wearing out of valuable plants and tools. All this implies accurate adjustment of accounts. When large sums are paid in wages, it is essential if the business is economically conducted, that the time during which the help is employed and the work upon which it is engaged, be accurately and sufficiently recorded. It is equally important that the material should be systematically charged to the work on which it is used. It is only by these means that manufacturers can know the cost in wages and material of any article of their make, and be able to determine accurately, not merely approximately and by guess, the actual profit or loss they make or sustain; not only on the aggregate transactions during a given period, but also upon each individual transaction. In a business, the operations of which vary widely in character, this special knowledge as to the pecuniary result of a particular piece of work is of paramount importance, for it is not only conceivable, but very probable that the presence or absence of this information may determine the policy to be pursued in accepting or rejecting large contracts; for while in selling or contracting the price is limited or determined in the majority of cases by competitors, it is obvious that the ultimate determining factor is the cost below which a manufacturer will not knowingly supply for any length of time, in the absence of some equivalent advantage in other directions. In the future, the selling price of commodities will probably stand in more close and direct relation to cost of production than heretofore. The dealer or middleman has endeavored to buy from the manufacturer at the lowest price he could get him to accept, and has endeavored to sell to the retailer or user at the highest price which competition with other manufacturers permitted.

The lack of knowledge of cost has thus often meant that manufacturers unknowingly have been selling their products below cost, but have considered their price remunerative because on the whole their business was apparently profitable. The tendency to the combination of the productive and distributive function will necessitate larger knowledge of cost in productive departments. There is always danger when only the general result of a business is known, of departments or processes which are relatively remunerative being unduly fostered, and of those which yield more than the average profit not receiving adequate attention. Employers should

not, as is too frequently the case, be entirely dependent upon the periodical profit and loss accounts for their knowledge as to the financial result of their transactions, but should at any time and at any stage of manufacture be able to ascertain to a certainty, rapidly and reliably the actual, and not the merely estimated cost of production of any given article of their manufacture. They should also be able to determine without delay and labor of an inventory, the quality of stock and raw material on hand, or of any particular item or part thereof. It would be discreditable to your bookkeeper if you could not ascertain by a glance at the books the amount of cash on hand without having to count it. By means of detailed records of cost accurately compiled, carefully considered and criticized, purchases of supplies, raw material and expenditure of wages may be regulated, production facilitated, increased economies introduced and the business thereby placed on an improved competitive and profit earning basis.

These are only a few of the questions which present themselves in a cursory consideration of the nature of cost keeping. The subject of prime cost admits of varied treatment. When the indirect charges and depreciation are of a more or less fixed character, it is probably sufficient to know the cost of an article in wages and materials only, but if the indirect expenses and wear and tear of plant form a more direct element in the cost of production, it would be highly desirable to apportion such items among the different departments or operations, the deterioration of plant, tools, machinery and buildings deserves the serious attention of factory owners. The advantage of keeping accurate cost account, clearly representing the actual state of affairs, is particularly evident in case your business is for sale, or if the whole or part of a factory is destroyed by fire, to get all the loss of stock under process of manufacture; and on occasions of strikes or reduction of wages, employers have less hesitation in accepting the results shown by the books as correct and based on fair principles.

There are probably as many methods of cost keeping as there are diversified interests. In some lines of manufacture, each article or number of articles is designated by a shop number; all labor and material belonging to this job is charged to this number, and when the work is completed if the cost account has been properly kept, the manufacturer should be able to judge at a glance what each operation cost, and in this way locate any waste of material and loss of time. After once establishing a cost system and keeping track of your labor, it will assist a great deal in adjusting the amount of wages to be paid to the labor, and usually meets with their approval and co-operation. In some factories it is not necessary to go into cost keeping so extensively, because the same class of work is done each day; which would apply to the making of brick from sand and lime. The time of your labor can be kept on the ordinary weekly time book. A record of your lime, fuel, sand (if purchased) and supplies can be kept on a book similar to a cash book. A weekly factory report slip similar to form attached is simple and answers the purpose very well. This gives the cost of all labor, fuel and lime used for the week, the output of your factory each day, number of brick shipped, and at the same time you have an inventory of manufactured stock on hand. In our factory we base our cost for incidentals, repairs, etc., from the previous year's report, which is very near accurate. Some manufacturers of sandstone brick charge every item to expense and close their books every month, which is a satisfactory method; we however, close our books once a year or at the end of the season.

Adjourned until 2 o'clock.

December 5, 1907, 2 P. M.

The President: The first thing for the afternoon program is a paper by Mr. Marriott, Columbus, who is an architect and who is going to tell us why they don't like sand-lime brick. Mr. Marriott.

THE ARCHITECT'S ATTITUDE TOWARD SAND-LIME BRICK.

J. M. MARRIOTT, COLUMBUS, OHIO.

The question of the architect's attitude toward sand-lime brick is of such great importance to the architect and his client, and to the manufacturer and the dealers in this material, that I regret exceedingly that a press of business has made it impossible for me to give this subject the time and thought it deserves. I also feel that I am but poorly qualified to properly handle a subject of so great importance.

There are so many architects in this country today, that it is impossible for me to say positively what views others hold on this question. However, the best way to learn what other men think, whether they be architect, manufacturer, dealer or prospective builder, is to go to them with the question at hand and ascertain their views.

I have made an effort to do this, with the result that I became convinced that my own experience in the use of your product and opinion as to its merits reflect in a fair way the attitude of a majority of my brother architects.

My attention was first called to sand-lime brick in Birmingham, Ala., where I was in business till 1904. A new plan had been established there and they introduced their product in open competition with other brick.

For several reasons, (which it may be well to mention) prospects were exceptionally bright for this new enterprise. In many sections of the South, there is no suitable clay from which to make a good pressed brick, consequently it was necessary to import all first class building brick from the North. This naturally made the price of brick high and created a market for the new product. Other natural conditions favored the future of sand-lime brick, for in and around Birmingham there were fine deposits of silica sand and the finest of marble lime, the two principal ingredients of sand-lime brick. Thus you see that, with the natural conditions favoring this new enterprise, it was only necessary to unite good management and capital with these natural resources and its success would be assured.

The problem which faced this new company, and which has, I believe been the obstacle in the path of every sand-lime brick company, was to get the architects to recognize their product, and convince the public of its merits.

How could they convince the architect that this brick was as good as others, that it would stand the ravages of time, and the attack of the elements; and that it would produce artistic effects.

Clay brick has stood the test of years, it had satisfied the public and readily adapted itself to the various needs of the architect; but it was expensive. Here was a new product, costing less than its older rival; would it meet the requirements and stand the test? It must have merits which would win the recognition and support of the architects.

The successful practice of architecture is dependent upon many qualifications. One of the most essential of which is the ability of the architect to appreciate the value of new inventions or products in all branches of the building trades. However, his decision, relative to such matters must always be influenced by his relation to his client, which as you well know, is that of mediator, or in many cases the final judge of what is to his clients best interest. To protect our clients interest we must know how to advise him, at all times and under all circumstances. We are responsible to our client for the trust he has placed in us and in the advice we give him we must be certain of our position.

Then too, our reputation is at stake. We must be certain that we are right; in spending the money of our clients we must be even more careful than though we were using our own capital. We can not afford to give advice unless we are sure the result desired will be accomplished.

What then should the architect do if he is called upon to recommend a new product?

He should first investigate and satisfy himself that the product is good, that it will fulfill all essential requirements and that it is in every way what it is claimed to be.

Here then is the problem, and the architect must be the judge. He must protect his clients' interests on the one hand, and the interests of the producer on the other.

His adverse judgment may mean the ruin of a new industry in which a small fortune is invested. Is it not essential then that he investigate even in detail before committing himself?

Here has been the great trouble with many members of our profession, they have not investigated. They have passed judgment without proper consideration, and instead of aiding a new and worthy enterprise, they have hampered its progress.

When sand-lime brick was first brought to my attention, I was confronted with statistics and government reports; I was told the brick had been used in Germany for a hundred years with the best of results. All this evidence was shown to prove that the brick was the equal in every respect to the clay product. Government tests and reports meant more than any other thing, but the one fact lacking was the actual knowledge of the test of time.

To satisfy this grave doubt, I saw this brick tested for strength, and by fire, water and freezing, and but one verdict could be reached; that it was the equal of any clay brick on the market. The result convinced me of the advisability of using the brick and I have since used it or advised its use in several buildings of more or less importance and that too without regret, but you, as manufacturers and dealers, must not lose sight of the fact that you will probably have to convince most every other architect of the value of your product and that too in much the same manner as you did me for we are more or less human though some of us are not, being from Missouri.

Our attitude then towards your product is either negative, neutral or enthusiastic depending wholly upon your ability to present convincing evidence of its merits.

I believe however, that you will find us open to all reasonable arguments and for the most part willing to give a meritorious article a fair trial and you must depend upon your product to do the rest.

Like every new product, sand-lime brick has much to contend with; the prejudice of a prospective customer, even though he be the client of a convinced architect, is sometimes impossible to overcome; the fierce rivalry of competition with an old and established product is often too strong to successfully resist even with the advantage of a reduced cost;

and the enmity of labor and other interests are too well known to need any comment by me.

In conclusion, gentlemen, I may perhaps be permitted to offer a little advice; do not use a laboratory made brick as your sample but show the actual product of your plant and, if requested, samples of its ingredients; make an effort, by concerted action if necessary, to overcome all unjust competition and the spiteful actions of those who would be gainers thereby, but be careful in so doing that you transgress no laws or commit no acts which would compromise you in the eyes of those of our profession to whom honor means more than wealth and as satisfied client more than new business.

It is needless for me to suggest that you use every possible effort to improve the quality and value of your product, your presence here indicates your desire to do this; let me suggest that all efforts made towards the standardizing of your product both as regards size and quality and any attempts you may make to produce various texture and color effects will in my opinion be steps in the right direction and will, if successfully accomplished, materially increase its sale.

There is one defect in your product which should receive your earnest and careful consideration, namely its tendency to spall on the edges and corners. I do not presume to state the cause or causes of this tendency; it may be due to a lack of homogeneity, it may be the result of the processes of its manufacture or it may be due to failure to properly season or cure the finished product, but whatever the cause, the elimination of the defect will, in my opinion, materially enhance the value of and the market for sand-lime brick.

Your product is comparatively unknown, your industry in its infancy, your future is and will be entirely dependent upon your own actions and efforts taken both individually and collectively. Your market however is world wide and personally I see no reason why your prospects for success are not as good as those of any other comparatively new product and I believe that I am safe in assuring you, gentlemen, that those members of our profession whose friendship is really worth having, that is those of us who, after being convinced of its value and artistic merits, are willing to stand by their judgment and use your product solely because of their belief in it, may be depended upon to extend to you the cordial sympathy and aid which we presume you desire to secure and without which your ultimate success will undoubtedly be a question of a far greater expenditure of time, labor and money.

Mr. Plummer: I move a vote of thanks be tendered to the speaker. (Carried.)

Mr. Jackson: Gentlemen, as a member of the Insurance Committee, I attended a meeting in Chicago with the committee from the underwriters at their laboratories. Our President and Secretary have brought up some of the matters pertaining to this meeting; and this report that I will read is a report that we have agreed upon after an all day's hard work. It is subject to change or revision. These underwriters are putting in a laboratory and testing plant whereby they can test all kinds of building material. Now, this pertains to brick; that is, building material in the brick size or form made from sand and lime; sand and cement; or clay brick. We were the first committee that met with the committee from the underwriters' association; and I understand it is their intention to present this report to the cement brick manufacturers and also the clay brick manufacturers and probably will be changed; and I will read

this report; and then I think we ought to give it plenty of time and go over the matter very thoroughly, and if at any point there are matters brought up that you know should be in here, why we will try and change it—change it at the present time; but it should be given lots of consideration, and there is a great deal more to that than we think of when we first start into it.

SUGGESTED TEST SPECIFICATIONS FOR BUILDING MATERIALS IN THE FORM OF BRICKS.

TESTS REQUIRED: The product shall be subjected to the following tests: ABSORPTION, FREEZING AND THAWING, FIRE, TRANSVERSE, and COMPRESSION, and the weight per cubic foot and specific gravity determined. Additional tests may be called for when in the judgment of the Underwriters' Laboratories, Inc., it may be necessary.

All tests are to be made at the Underwriters' Laboratories, Inc., at the expense of the applicant.

For the purpose of the tests at least sixty-five (65) samples representing the ordinary commercial product shall be provided.

They may be selected from stock or taken at such stages after manufacture as may be desired by the collector, or made in the presence of the collector at his discretion, but in no case shall the samples be more than twenty-four hours old when taken. The samples shall be approximately 8 inches long, four inches wide and 2 inches thick, and in all cases shall be the size of the commercial product.

Information regarding the character and treatment of materials used, the method of manufacture and also samples of raw materials, shall be furnished the collector, if required by the Underwriters' Laboratories, Inc.

The samples shall be tested between the 30th and 60th day after manufacture.

Five samples shall be required for each test, except for fire tests where twenty-three samples are necessary. All tests shall be made on full sized samples, where possible.

All samples shall be carefully examined and condition noted before subjected to any test.

PERMEABILITY AND ABSORPTION TESTS: The five samples to be first thoroughly dried to constant weight in an atmosphere of about 250 degrees Fahr. and weight carefully recorded. Samples then to be placed on their faces in a pan or tray of water to a depth of $\frac{1}{8}$ inch.

The samples shall again be carefully weighed at the following periods: one-fourth hour, one-half hour, three-fourths hour, one hour and each hour thereafter for a period of seven hours. The level of the water shall then be raised to a depth of two (2) inches and samples again weighed at the following periods: twelve hours, twenty-four hours and forty-eight hours respectively from the time of first immersion.

[*Note:* Superfluous moisture to be removed by carefully wiping with a damp cotton cloth before each weighing.]

FREEZING AND THAWING TESTS: Five samples to be immersed to a depth of two inches, as described in the absorption test, for forty-eight hours, and the weight carefully recorded; to be then placed in a refrigerator and subjected to a temperature of less than fifteen (15) degrees Fahr. for sixteen hours; to be then removed and placed in water where they shall remain for at least eight hours, temperature of the water being not less than one hundred and fifty degrees (150) degrees Fahr., nor more than two hundred (200) degrees Fahr. during this period.

This operation to be repeated ten times after which the samples are again weighed while still wet from the thawing.

[Note: Immediately on completion of this test, samples are to be subjected to transverse or compression tests.]

FIRE TESTS: To be made on twenty-three samples as follows: Eighteen to be placed in a panel 4 inches thick by 18 inches high by 24 inches long. The samples to be laid on the 4 inch face in cement mortar with joints broken, having one header and five stretcher courses. The header course to be in the center. The panel to compose one side of a gas furnace suitably constructed to permit of the removal of the panel for water treatment at the end of the fire test. The sample panel to be subjected to fire on one side only for a period of one hour and thirty minutes. Temperature of furnace to be raised uniformly from that of the atmosphere to seventeen hundred (1700) degrees Fahr. in about thirty (30) minutes and remain at about that temperature for the succeeding hour.

At the end of the fire test, panel is to be quickly removed from the furnace and a stream of water immediately applied for one minute through a $\frac{1}{2}$ inch nozzle at a pressure of seventy-five (75) pounds per square inch at the base of the nozzle. The distance of the nozzle from the sample to be twenty (20) feet.

Five samples are to be placed within the gas furnace at the time of the test on the panel and receive the same fire treatment as the panel except that they are to be heated on all sides. Two samples to be removed at the end of one and a half hours and plunged into cold water of about 50 to 60 degrees Fahr.; the other three to be removed and permitted to cool gradually in air.

After the above fire treatment the condition of each sample shall be carefully noted.

[Note: The fired samples which have been fired on all sides and as many as five samples selected from the fired panel shall be tested for transverse and compression strength as prescribed, within twenty-four hours. The samples to be protected from the weather.]

TRANSVERSE TESTS: The samples to be placed flatwise on two rounded knife-edge bearings set parallel seven (7) inches apart. The load is to be applied on the top, midway between the supports and transmitted through a similar rounded edge until the sample is ruptured.

The modulus of rupture shall be determined by multiplying the breaking load in pounds by twenty-one (21), (three (3) times the distance between the supports in inches) and dividing by twice the product of the width in inches by the square of the depth in inches.

Twenty-five (25) samples, which have been treated as follows shall be tested.

(a) Five (5) samples which have been thoroughly dried to constant weight.

(b) Five (5) samples which have been saturated as prescribed in the absorption test.

(c) Five (5) samples which have been subjected to freezing and thawing treatment as prescribed in the freezing and thawing test.

(d) Five (5) samples which have been fired on one side only. Samples to be selected from the fired test panel.

(e) Five (5) samples which have been fired on all sides and were quenched and cooled in air.

[Note: This includes all of the samples subjected to fire on all sides.

COMPRESSION TESTS: To be made on whole samples. The samples to be carefully measured and then bedded flatwise on blotting paper, to secure a uniform bearing in testing machine and crushed. Total breaking load is then divided by the area under compression in square inches.

THE FOLLOWING REQUIREMENTS SHALL BE MET TO
SECURE THE APPROVAL AND CLASSIFICATION OF
THE MATERIAL REPRESENTED BY THE
SAMPLES SUBMITTED:

(a) Absorption (being the weight of water absorbed divided by the weight of the dry sample) shall not average higher than 15 per cent, and no sample shall exceed 20 per cent and the absorption in six (6) hours shall not exceed 75 per cent of the absorption in forty-eight (48) hours.

(b) Freezing and thawing process shall not cause a loss in weight greater than 5 per cent.

(c) The fire and water treatment of the panel must not damage the brick to a greater average depth than $\frac{3}{8}$ inches.

(d) Modulus of Rupture must be as follows:

For samples thoroughly dry—average shall not be less than 400 and no sample shall fail below 325.

For samples thoroughly saturated—average shall not be less than 300 and no sample shall fail below 245.

For samples subjected to freezing and thawing process, average shall not be less than 265 and no sample shall fail below 210.

For samples subjected to fire treatment on one side only, average shall not be less than 250 and no sample shall fail below 205.

Samples subjected to fire on all sides and either quenched or cooled in air shall fill the above requirements for fired samples.

(e) The ultimate compression strength must be as follows:

For samples thoroughly dry the average shall not be less than 2,500 lbs. per square inch., and no sample shall fail below 2,000 lbs. per square inch.

For samples thoroughly saturated the average shall not be less than 2,000 lbs. per square inch and no sample shall fail below 1,600 lbs. per square inch.

For samples subjected to freezing and thawing process, the average shall not be less than 1,675 lbs. per square inch, and no sample shall fail below 1,500 lbs. per square inch.

For sample subjected to fire treatment on one side only, the average shall not be less than 1,750 lbs. per square inch, and no sample shall fail below 1,600 lbs. per square inch.

Gentlemen, that is submitted for your discussion.

The President: Now you have a proposition before you. What is your pleasure? The idea is, as stated in my paper yesterday, that this specification is a preliminary; in other words, we will make tests based on this specification; the tests will be made of all the various materials that come under the head of brick; and if it is found that these brick will stand these tests, then these tests are to be adopted as a standard for building material. After these specifications have once been adopted, the Board of Fire Underwriters, whose laboratory is at Chicago, will give such plants as make brick that come up to these specifications their endorsement; and that endorsement means that the buildings built of this brick, or those brick, will receive the lowest rate of insurance.

That specification will work two ways. If you are making a good brick, you will have the best card that you can possibly have to go to the architect and say: "My brick are endorsed by the Fire Underwriters' Lab-

oratory." That endorsement will be official, and one which you can use; and it will guarantee not alone to the architect but to the owner that he will get a material which stands these requirements. The laboratory reserves the right at any time to go into your plant, select samples and make tests, if they are satisfied that you are not keeping up to that standard. On the other hand, if you are not going to make good brick, and if you are afraid of the specification—why, it will be a mistake for you to go into this at all—a mistake for you to adopt it and you had better let it alone.

Now, if you feel that that is your position; if you feel that you can not make a good brick—why, there is no further discussion necessary; but I am sure I know from my own experience that we can make good brick, that we can make the best possible brick. I know, from the tests that Professor Woolson made in New York, that of the brick that were used in that test, sand-lime brick stood the test better than any of the clay brick; and the clay brick that were used in that test were the best clay brick that were made in the East; and I think that the Hudson River hard-burnt clay brick and the Philadelphia hard-burnt clay brick have the reputation of being as good clay brick as are made in this country.

There are some points in the specification that we are somewhat in doubt about; and that is, whether the tests to be made on fired samples are fair. We don't know; there is absolutely no data to go by, and consequently we are somewhat in the air on it. Now the idea is that after the tests have been made, if we find that they are wrong as compared with good materials they will be changed accordingly. As far as the absorption test is concerned, the compression tests and the transverse tests, they are the tests that are required today by New York City; and from my knowledge of the art, there are no sand-lime brick plants that can't come up to that specification, if they will. Any remarks?

Dr. Lazell: Do I understand that these are tests that you want to have adopted by this Association; or, are they just put out tentatively?

The President: Put out tentatively. The idea is to adopt them with that understanding.

Dr. Lazell: I would like to call attention to one or two things. A good sand-lime brick will pass the absorption test, the compression test dry, the compression test after absorption, the compression test after the freezing, and the same transverse tests; but I don't think there is a sand-lime brick, or a red brick, or fire brick made that will pass the fire test. The 1,700 degrees is not very much heat; but lime itself dehydrates somewhere below a thousand degrees. Sand expands rapidly at less than 500 degrees. In most clay bricks those materials are present, too; and any brick that is submitted to one hour of 1,700 degrees, then suddenly cooled with a stream of water, has lost probably fifty per cent of the strength. Unless they will let you plane off the side exposed to the heat and freeze the side that was not exposed to the heat, then you pass; so I should think the Association could accept these perhaps tentatively, perhaps to work on; have those tests made and whatever a common clay

brick will test will pass the brick. A test fair for clay brick is fair for sand-lime brick; there will be no trouble to pass it.

If they require modulus of rupture of bricks exposed on one side to 250 pounds, that is more than fifty per cent of the strength; and I don't think there is a brick made to stand that test, unless specially made to stand it. There are very few fire bricks made that will stand a thousand pounds to the square inch just as they are made.

One other thing I don't like; and that is, that the test should be made at the underwriters' laboratory. Why put a California, or Texas, or Florida manufacturer to the expense of sending sixty-five bricks to Chicago to have a test made; then coming on to see that test made, when the chances are that his own state university laboratory could make the same test as they can; and the underwriters should be willing to accept that test.

Mr. Jackson: I know some of those same matters that the Doctor brought up, we brought up at that time, and we would have reduced, some of those figures; and they stated at that time that if they found that they were incorrect, that they could be changed at any time. The only data that they had, and that didn't really cover the information that we wanted, was from Professor Woolson's test; didn't have any thing that was up-to-date, or that they could rely upon; and that didn't really cover the test as made—as they expect to make it, the fire test, other tests which they could get; and we felt ourselves—I agree with what you say, that we thought that it was not right, that it wouldn't stand; and they are going to take that matter up now with the clay brick manufacturers and the manufacturers of cement block in the brick size, and that can be subject to change and the revision of the figures; and the committee thought it would be a good plan to bring that matter up before the Association and they could act upon it and see what action they cared to take.

Mr. Smith: Is it possible to make a few of those tests and not all of them? For instance, after they have decided on a certain modulus of rupture and a certain transverse test, that they would also meet a certain fire and freezing test—wouldn't they be satisfied with making, say three or four tests at any one of a half dozen laboratories of the country, they stating the laboratory, and not going to the expense of making the complete test? Each one of us would want that done; and the clay brick people would also; and it means a great deal of money thrown into the hands of the Underwriters' Laboratory and out of our pockets; whereas, if we could make three tests that would cost say \$100.00, it would be a better proposition all round for the sand-lime brick and the clay brick as well. If they made the tests of absorption, etc., and they came up to all the other tests of the other bricks, wouldn't that be a fair proposition for the underwriters' office, too?

The President: As the matter stands, it is entirely in their discretion what tests are required. The compression test—they are more interested in the fire test than they are in any of the other tests. Now, I doubt

very much whether the compression test or absorption test would indicate what the brick would do in the fire. The result of fire test on any brick will depend more upon how that brick is made than anything else.

Now, to answer some of the claims that Dr. Lazell suggested; and that is, that the tests be made at various laboratories—I think that will come in time, naturally, of its own accord. If the underwriters in Chicago undertook to test the materials all over this country they would be swamped; they simply could not do it. I think that their idea is more that these tests should be made under their control and under their specification, than anything else. I think that will naturally follow. Aside from that, their position is this: that when you go to a laboratory for tests, if the tests are not all made in the same manner, under like conditions, they are not comparative. Now, their aim is that if the tests are all made at their laboratory they will necessarily be comparative—if they are made by a corps of men who are properly instructed and who carry out their work from day to day.

Now in regard to the expense: the laboratory at Chicago today is run at a loss of something like \$30,000 a year; it is not their intention, nor has it been, to make it a money-making proposition. It is their intention to charge only what the actual costs are. They are doing that now with other materials. When I was there the other day they were testing windows. These windows were from some distant part of the country. They had tested a great many. Every manufacturer who wishes to put a window on the market that he claims is particularly good for fire resisting purposes sends his material to Chicago and has it tested. If it passes the test he gets their endorsement; if it doesn't, why, he is out.

The whole idea is to get the manufacturers to make a material that the public can depend upon; and the Underwriters' Laboratory stands between the manufacturer and the public. They protect the public and are protecting themselves. The losses by insurance, they claim, have been something tremendous, due to their not being familiar enough with the materials that go into the buildings that they insure: making rates which they could not stand. Now I am not advocating the Underwriters' Laboratory; but what I do advocate is, that we make a good material. Now, if we are willing to make a good material we should be willing, as an Association, to adopt a specification which represents a good material. Now all I think, that we can do here is to express our willingness to concur with the Fire Underwriters' Laboratory on a specification which means good material; and as to the detail of the future, whether we want our plants to have our materials tested at Chicago or any other place, that is entirely up to the individual manufacturer. This action on the part of the Association does not compel any one member or all members to send their brick to Chicago or any other place to be tested. It merely indicates that this Association is in favor of good material and is in favor of a specification which represents a good material and after that they are done. Then it is up to the individual manufacturers. If you find that an architect objects to your material, you can not sell your

material; he says that it is not what it ought to be—then it is up to you to decide whether you want to send your brick to the Fire Underwriters' Laboratory and have them tested and get their approval, or otherwise. Am I right in that, Mr. Jackson?

Mr. Jackson: You are right, yes, sir.

The Secretary: I would like to add something I forgot to add which comes to my mind through Mr. Duerr's argument, and that is this: that there is not anybody more vitally interested in this matter than the underwriters at the present time. The government is not interested in it more than perfunctorily. The ordinary engineer who may happen to get some of this brick, is not interested in it more than from a question of a mere business proposition. But we are absolutely interested in it; and the underwriters are interested in it in this way—that you must remember that the ruling has gone forward that sand-lime brick shall be discriminated against. I hope you get that idea. You seem to be thinking that the thing is just a question of an easy way of settling this matter whether we shall or shall not take up this question of specifications; and the sooner you get hold of this idea that unless you pass upon this some how or other this afternoon that ruling which has been taken back pending the arrangements that will be made upon these specifications, has only been taken back during that time and it will be enforced again if no determination is reached by this Association—the sooner you get this into your minds the sooner you will understand how if that ruling is re-enforced the rest of the tariff associations and insurance people will follow like a flock of sheep and simply discriminate against your products. If it had not been for the Association this summer meeting the underwriters, half of the plants in the South would have been suspended. Am I not right, Mr. Smith?

Mr. Smith: About right.

The Secretary: Contracts which were secured were taken back because they had discriminated against the manufacturers of sand-lime brick to forty per cent, so that no private individual was willing to use sand-lime brick and use it in their structure and pay forty per cent extra insurance.

As a result of the labors of that committee, the Standard Association and the members of the Bureau resolved to withdraw their ruling pending the decision of the Underwriters in the matter. That is the way the game stands today; and the whole question lies before us now as follows: that these specifications are merely tentative. It is acknowledged by those who drew them up—both the Underwriters and by those who represent this Association—that we know very little about it, very little about it. There are no engineers that know very much about it, for the simple reason that all the tests made hitherto have not been comparative: they have been made under different conditions largely, and several personal hobbies have been ridden upon the matter; so that you can not even compare the results that have been obtained. When we started on this work here, however, the data were most difficult to get on some of the

tests because they differed so widely. Here is a tentative set of specifications; and what the Underwriters and the Association's committee have done has been to get together and say that the Underwriters have agreed upon a set of specifications—a set of specifications drawn up jointly, to make tests on products from four to six of our representative plants of the industry and upon the result of those tests to make their report to the fifty-seven tariff associations that they control largely by their rulings; and there ends the responsibility to the Association. It is no question about the manufacturer having to take the matter up with the Underwriters at all; but whether we as an Association want to get some kind of a standing which we have not got; and beyond that there is nothing to it.

As Mr. Duerr said, if this thing really is enforced by the Underwriters and they apply it in all the trades, the Underwriters' Laboratory in Chicago could not begin to take care of a thousandth part of the work that would apply. It simply means an adjustment of conditions so that if firms throughout the country will adopt specifications found out to be suitable by the Underwriters, that they will be willing to accept the tests made by the engineering firms on bricks in different parts of the country. Each different individual manufacturer can then take it up at the nearest point to suit his convenience as regards that.

Mr. Smith: Are they willing to hold up their discriminating if we accept this? I think this test can be made on that supposition.

The President: I understand so.

Mr. Smith: Then I would like to make a motion to accept that proposition. Seconded by Mr. Plummer.

The President: I would like to have you put that in writing.

Mr. Plummer: I have one in writing. "I move you, gentlemen, the adoption of this report as showing that this Association heartily approves of an official test or set of specifications for sand-lime brick products, subject to such modifications as experience may show are just." It seems to me that the Secretary has made it very clear to us, that fact that we had lost sight of, although it was alluded to the other day: this Board of Underwriters has started in clearly, we believe, to discriminate against sand-lime brick; and a halt has been made on this and they have met with our representatives, and have been sufficiently influenced to give heed to what we have to say. Unless we go at them at once, they are very likely to carry out that idea that had been in their minds, that the board recommends, and that we are glad to submit to the tests. If we can not stand these tests, we ought to know it p. d. q.: that means right away; because we are up against a serious proposition.

I believe our brick can stand any test which can be reasonably imposed on any material for building construction. For that reason I hope we will adopt this report and put back to the Underwriters to show cause why we are not in business to stay here in comparison with any other brick. An architect says: "All kinds of brick that are good," and we want to establish the fact that we have got good brick.

The President: You have heard the motion; it has been seconded; those in favor signify by saying Aye; contrary, No. Motion is carried.

Mr. Smith: I think, as this is a very important question, that it would be well to count, so as to have a majority of all the members; so that those not here can not say that we took action that they did not approve of.

Dr. Lazell: I will make the following motion—that the Association stand the expense of the test—the full test. In case the individuals whose bricks are chosen want that, I suggest that they reimburse the Association their share of the test. That the Association pay the first whole cost of the test; if the individuals whose bricks are tested want to use the tests afterwards, that they reimburse the Association for their proportion of the cost of the test. It being understood that those tests shall be the property of this Association. Seconded by Mr. Jackson. (Carried.)

Mr. Jackson: I make a motion that the chair appoint a committee of three members of this Association, or else that we instruct our executive board or the committee that has had this fire insurance matter in hand to meet a committee from the clay brick and the sand-lime brick makers and see if they won't enter into an arrangement with us on this line so that we won't be in there alone.

The President: It has been moved and seconded that the Committee on Specifications, who have the matter up in reference to this insurance, confer with the clay brick manufacturers in regard to the financial end of this deal. (Carried.)

Adjourned to 9:30 a. m.

December 6, 1907, 9:30 A. M.

The President: The first thing on the program this morning is a paper by Mr. Hobart. I hope you all had your good night's rest and will be able to stand a full and strenuous session. Mr. Hobart.

Mr. Hobart: Mr. President, Gentlemen of the Convention: I think I owe the members a little apology for this paper. I was requested by the Secretary to treat the subject; and after I got well into the paper I found myself in the condition of the Irish sailor. The captain sent him below to coil up some rigging; and the man was fussing around there about half an hour with the rope trying to get started in coiling it up, and he said, "Pat, why don't you coil up that rope?" "Faith, sor, and I can't find the end, sor." "Where is the end?" "I don't know, sor. Somebody has cut it off." I think that is the way with the paper: it is longer than I expected. (Laughter.)

This able paper entitled "The Errors in Manufacturing Operations and Their Remedies," covered twelve classes of errors to which sand-lime factories are liable from the inception of the project to the success or failure of the plant. These were: Inception, location, equipment, construction, system, lime, sand, water, operation, capital, superintendence and selling.

(Much the greater part of Mr. Hobart's address was extemporaneously spoken from the text of his paper. After the convention he agreed to rewrite the paper with such additions as would make it adjustable to the fusillade of comment and discussion which followed, but he failed to do so promptly and consequently his "Omnibus Bill" can not be reproduced in print.)

(Mr. Squier assumed the chair temporarily, during the foregoing reading.)

Chairman Squier: Mr. Van Glahn.

HOW SAND-LIME BRICK SHOULD BE MADE.

BY J. H. VAN GLAHN, TOLEDO, O.

The question of how sand-lime brick should be made is becoming of greater importance as the industry expands and the use for sand-lime products becomes in better demand.

If the manufacturer of sand-lime brick will study his products, and the nature and formation of his material, he will readily become convinced that in order to produce perfect brick it is necessary that the material should be properly prepared before it goes to the press, and to prepare the material as it should be, it is necessary that a portion of the sand should be pulverized into an impalpable powder. The proportion depends upon the nature and formation of the sand employed.

In some experimental tests made by us within the past year, perfect brick were produced by pulverizing 20 per cent of sand. As this proportion applies only to certain grades of sand, it is necessary to make a study of the material, and pulverize the proportion of sand best suitable for the product necessary to obtain the best results.

Perfect bricks were produced by pulverizing 15 per cent of sand, while in other cases, by actual experimental tests, it was necessary to pulverize 25 per cent and 30 per cent of sand to obtain equally good results with sand of entirely different formation.

The practical method of obtaining the best results is to pulverize the required proportion of sand into an impalpable powder, regardless of mesh. The finer and more uniform this product can be made the better. Mix it with the natural sand together with the required proportion of lime, which must also be properly prepared, and the product for the press becomes plastic, soft and pliable, readily yielding to force or pressure without rupture or breaks. Instead of it being short and crumbling, the material, when prepared and properly moistened just before going to the press, retains a flexible nature as it should.

Instead of allowing all the sand, together with the raw lime, to pass through the pulverizer, to obtain the required proportion of pulverized sand, it is better and more economical to run the required proportion of sand without the lime through the pulverizer and obtain an impalpable powder of sand suitable for the purpose of mixing with the natural sand.

By this method of pulverizing only the required proportion of sand into an impalpable powder, and mixing it with the natural sand, pulverizing machinery of lesser capacity can be installed to obtain the required results, the working capacity of the plant is increased, and the natural wear and tear of machinery together with the power and fuel bills are reduced. These items of savings in the brickmaking industry are of considerable importance, and should not be overlooked by the manufacturer of sand-lime bricks, when economy of production is desired.

Sand containing vegetable matter consisting of roots from trees, etc., should be subjected to direct heat, and the vegetable matter reduced; otherwise it will make its appearance in the bricks, and greatly injure the binding qualities of the material. It is understood of course that the sand and lime in all cases contain the proper properties necessary for making good brick. The lime necessary to make the proper combination for the mixture of the required product should by all means be perfectly hydrated. No partially hydrated lime can be used with satisfactory results.

Hydration means the necessary addition of water to lime, for the purpose of slaking it without forming a putty.

The so-called dry slaks, practically air-slaking, frequently called hydration, is misleading and should not be understood as proper hydration.

The method of hydration or slaking of lime varies in the different localities and by the different limes. Take a high calcium or "fat lime"; it is necessary to give it the proper proportion of water, which must be applied and come in immediate and positive contact with all the particles of lime at a period before hydration takes place.

If too much water is used the binding quality of the lime is injured by the excessively viscous fluid, and if too little water is used it is injured by burning, which renders it granulated and lumpy, causing the particles of lime to remain and show up in the brick when finished and injure the product.

Lime hydrated in a rotary cylinder or pan is constantly agitated, in a manner mixing the finished product with the unhydrated particles, and the contents of these machines together with the unhydrated particles are discharged into a hopper or bin and transferred to a separator.

Lump lime should be crushed reasonably fine before the product is hydrated. This is necessary to get the water and moisture uniformly distributed to all the particles of lime, to secure uniform hydration.

Lump lime hydrated in open tanks or vats is subjected to both burning and drowning practically at the same time. By this method of hydration the water which is poured over the lime exposed at the top of the vat immediately rushes to the bottom of the tank over the surface of the lumps of lime, allowing the lime at the top to heat without proper absorption, causing it to burn, while the lime at the bottom of the tank is injured by the excessively viscous fluid.

To produce a perfect hydrate of lime it is necessary that the lime should be properly treated in a closed vessel, without change of temperature. The moisture absorbed by the lime should be applied gradually and in no greater quantity than is required.

Lime passing through the stages of hydration expands in volume, rises above the unhydrated particles and separates from the unslaked lime. This is true of the nature and action of properly burnt, live lime, even though it is not agitated while hydration takes place.

When lime reaches the finished stage of hydration it must be expelled from the hydrator without again mixing with the unhydrated particles; otherwise a perfect separation between the finished hydrate and the partially hydrated particles can not be successfully accomplished. The partially hydrated particles must be subjected to further exposure, and the remaining small percentage of unhydrated particles must be pulverized into an impalpable powder, by means of a hammer mill device which must form a part of the hydrating machine employed.

We are now able to construct a hydrator that will produce perfect hydrate of lime, such that will not expand nor swell the brick under severe steam pressure. Hydrated lime can be successfully used in preparing the material, and perfect brick of superior quality are assured.

By pulverizing a certain per cent of sand into an impalpable powder, an intimate mixture between the hydrated lime and the pulverized sand is obtained. This combination of material, mixed in proper proportion with the natural sand, forms a coating over all the grains of sand. The proportion of pulverized sand not only aids the chemical action, but fills the voids, assuring better bricks, provided that in making the bricks proper and sufficient pressure is applied.

No good results, nor fancy bricks can be obtained unless the necessary pressure is applied. The extreme pressure required to secure dense and fancy bricks necessitates that the power-producing elements of the press be enormous, and as the success of making sand-lime bricks depends greatly upon the life of the press, this particular feature becomes of importance in the art of manufacturing sand-lime products.

If the manufacturer of sand-lime bricks will purchase the lime in its raw state, or the so-called lump lime, in carload lots, and run it through the hydrator, one especially designed and built for making perfect hydrate of lime, he can, in connection with the brick-making, without additional cost of machinery and labor, produce hydrated lime for the trade. The profits derived from the sales of hydrated lime in connection with the brickmaking will practically pay the cost of all the lime necessary for sand-lime products throughout the season's run, thus confining the cost and expenses of operating a brick plant solely to the sand and labor required, reducing the cost of making sand-lime bricks to a minimum, and increasing the profits on the output of bricks thus made. Hydrated lime goes hand in hand with sand-lime bricks in a commercial way. Every dealer in building supplies and consumer of bricks requires lime for the mortar in which to lay the bricks as well as lime for other purposes; and as hydrated lime is free from lumps, soft and plastic, it is especially

adapted to mortar for sand-lime products. Mortar made of hydrated lime will adhere to sand-lime brick much better than mortar made from the raw lump lime in its uncured state.

Every manufacturer of sand-lime bricks should make an effort to make the very best quality of bricks that can possibly be produced. It costs no more for material and labor to produce fancy bricks, than what is necessary to make bricks of inferior quality.

The life and success of the brickmaking industry depend upon the quality and cheapness of production, which should be maintained, and thus build up the sand-lime industry upon a practical and paying basis, and push it upon its merits until the sand-lime brick becomes the standard of all building materials.

Chairman Squier: Gentlemen, what do you wish to take up in Mr. Van Glahn's paper?

Mr. Smith: Mr. Van Glahn stated that his idea was to grind the lime separately and the sand separately (that adds a great deal to the expense) and then mix the two together afterwards. That means a lime pulverizer and a sand grinder.

Mr. Van Glahn: I didn't say grind the lime at all. The lime is perfectly hydrated. Grind the sand. Unless I get a perfectly hydrated lime I wouldn't do it.

Mr. Jackson: Do you use a river or a bank sand?

Mr. Van Glahn: We use any kind of sand; that is, any kind of sand suitable for making brick.

Mr. Jackson: Your paper pertains to a plant which you are running?

Mr. Van Glahn: Experimental test that we have been making—a small experimental test.

Mr. Palmer: I have noticed in these papers in treating of lime, referring to lime that was air-slacked; and it seems to be the opinion that such lime is inert and practically of no use. In our factory we necessarily have considerable lime that is air-slacked. The lime is unloaded from a car into a room in the factory that we call the lime room, and as one car runs us about a week, along towards the end of the week there is considerable of this lime that has been air-slacked. I would like to know if there has been found any remedy for this—if any others have the same experience, and if they have worked the matter out so that they can prevent this lime from air-slacking while it is in the storage room.

(President Duerr reassumes the chair.)

The President: I think I can answer that to a certain extent. We carry in stock from two to three carloads of caustic lime at a time; and we have it in a bin. We crush the lime immediately upon leaving the car and elevate that into a bin or enclosed room, which has no outside openings at all—has a roof on to close it in, as tight as you can close a building with brick walls, and roofed in with a wooden roof, tar paper. In the worst kind of weather, which is in the summer, when there is great humidity, you will find you get the most air-slacking. We have had the lime in there from two to three weeks without a particle of air-slacking; that is, not enough to make it apparent. All I think is necessary

is to put your lime in such an enclosed room or bin to prevent circulation of air, and you will find that you won't have any trouble with air-slacked lime. Any other suggestions?

Mr. Hobart: I find it my experience that the ideal way of storing caustic lime in a sand-lime factory was to crush the lime on its receipt in the car, as quickly as possible, and store it in an iron or steel cylindrical tank, round tank, and draw from the bottom. The tank is air-tight and closed at the top as tightly as possible. Lime treated in that way and placed in storage will keep a considerable length of time.

Mr. Squier: Mr. Hobart covered the point I had in mind. Many of the lime dealers have steel tanks, or iron tanks, that they fill from the top and close them. In Pittsburg there are a good many dealers that have them, and I am told they are able to hold lime six months in a tank of that kind. The opening at the bottom is very small, just room for shoveling, and the point is to keep it closed, and by doing that, as they receive another cargo it goes on top and they have no trouble storing the lime at all.

In speaking of the lime for this business from the hydrating standpoint, my notion is that the sooner you hydrate the lime, the better. If you receive a car of lime and have ample bin storage, hydrate all the lime, whether you want to use it or not, keep it in a tight bin, as tight as possible, there will be very little of it go wrong.

The President: Before we go on with the regular order of business which is up, after each session a number of gentlemen have come to me and say, "I have been on the point of getting up and making a remark, and have not made it because I was a new member in the profession," and they had some rattling good ideas, I thought. Mr. Gibson, haven't you something to say?

Mr. Gibson: In regard to the hydration of lime and letting it stand up in the bin, to age—that is, where the air is kept away from it—I find from my experience, as near as I can see, that we make a better brick than when it is first hydrated. I don't understand why it is so; but I would rather take lime that has been hydrated a week than take it just hydrated the day before. It is possible the complete hydration doesn't take place in the hardening tanks and I think what little is uncompleted is completed perhaps in this bin; although, as far as I can see, our bin is air tight, that is, practically so—made of lumber; and if there is anybody who can give me information on that, I should like to have it. I don't know why it should be that lime hydrated for a week should be better than that that has just come from the hardening cylinders or elevated and used immediately the following day.

The President: Dr. Lazell, I think, can straighten you out on that point.

Dr. Lazell: In hydrating lime, the hydration does not take place within the first few minutes completely: there is always some unhydrated lime and that is what the storage completes—the complete hydration. In the

old practice of making mortar or plastering, the lime was slacked in an excess of water and stored in the bin for any convenient time, sometimes for months—the reason being given that that mortar would work smoother under the trowel. The same thing applies exactly to the hydrated lime: it takes time to complete your hydration.

The President: My experience has been that if I can keep my lime enclosed in a bin to age for at least three days, that I get far better results in every respect than I did if used the following day. That is simply—I am not talking theory now; that is the practical standpoint of the working of the plant; and the consensus of opinion I have found would warrant my making that statement.

Mr. Carmichael: In the storage of hydrated lime I think we can learn a lesson from the hydraulic brick people. In the manufacture of high grade—that is, the very highest grade—of clay brick, we find them sweating their clays: storing it in bins and putting it through what is known as a sweating process. Isn't it a fact that we take our lime after hydration; we place it in the bins and it is like a sponge in a moist room: doesn't it take up, and make all lime practically the same in its percentage of moisture? You may have one car having a certain amount of lime with a certain percentage of dampness in it; you may have another one with a different degree of dampness. Placing those altogether in the bin for say from three to four days, it stands to reason that that is going through a sweating process and becoming as near alike throughout the bin as is possible to get; and I think that is one of the things that makes our lime much better—from an equalizing standpoint; and I believe it is better.

Mr. Gibson: I agree with that theory. I think the upper part of our boxes that contain this hydrate lime is more damp than the center or lower portions; and that in breaking it up it is thoroughly mixed when it goes in that bin and spreads all around and from there diffuses. Some may be over-moist and some must be perfectly hydrated; and giving it a little bit of time, I think, will thoroughly hydrate what is not hydrated.

Mr. Batley: As I have said twice, I am just a greenhorn in the sand-lime brick business. I came here to learn, and I am making observations as I go around the country; and I think I go around as much as most men sitting in this room. I have manufactured a great many millions of silica brick; the gentleman behind me is more versed in brick making than any man in this audience. In the manufacture of silicate brick we would not think of using lime fresh. We slack it with water, make it into a tough putty and it is kept in the bins from four to six weeks before it is mixed in its proper percentage of proportions with silica—before the silica and the percentage of lime go to the machine to be made into a silica brick.

The President: Anything further, gentlemen? If not, we are coming on the next part of the program, which is a report of the Committee on Representation. Mr. Smith is the chairman, I believe.

Mr. Smith: Your committee appointed for the purpose of dividing the territory into districts, begs to make the following recommendations: that the United States, Canada and Mexico be divided into five districts—Eastern comprising the New England States, New York, Pennsylvania, New Jersey, Delaware and Eastern Canada. Southern—Maryland, Virginia, West Virginia, North and South Carolina, Georgia, Alabama, Florida, Mississippi, Tennessee and Kentucky. Central—Minnesota, Wisconsin, Michigan, Iowa, Missouri, Illinois and Ohio. Western—Montana, North and South Dakota, Wyoming, Nebraska, Colorado, Kansas, New Mexico, Oklahoma, Texas, Arkansas, Louisiana and Mexico. Pacific—Washington, Idaho, Oregon, California, Nevada, Utah, Arizona and Western Canada.

We further recommend that the Executive Committee be increased to five members and that the President appoint upon the Executive Committee a member to represent each district, said member to keep in touch with the local plants in his district and do such special work as he may be called upon by the officers of the Association to do towards the general good of the industry. Seconded by Mr. Jackson. (Carried.)

The President: In line with that I would appoint Mr. Squier chairman of the Eastern Division; the Southern Division, F. H. Smith; Central Division, W. J. Gibson; Western Division, Mr. Clark Mellen; and the Pacific Division I will leave open at the present, until we get a little more familiar with the situation and find out who would be the best man.

The next committee to report is Committee on Resolutions. Before I have that committee report, I want to suggest that there was no motion made yesterday for a committee on the matter of specifications—insurance.

Mr. Penfield: I move you that the same committee be continued which has handled the work up to date, consisting of the President, Mr. Jackson and Mr. Von Spanje; as they are familiar with the work. Seconded by Mr. Plummer. (Carried.)

The President: The Committee on Resolutions—Mr. de Joannis, chairman.

REPORT OF COMMITTEE ON RESOLUTIONS.

Whereas, In certain localities the present method of weighing loaded railroad cars (more particularly in our industry those loaded with coal and lime) is ineffective, inaccurate and unjust, owing to the impossibility of connected cars being *weighed* in such a manner as to secure exact individual record of their weight.

Whereas, These cars en route being delayed frequently are subjected to pillage and the shipper in consequence does not receive the amount of material stipulated in his contract.

Therefore, be it resolved, That in such cases, this association demand from the railroad the right to purchase materials according to weights at point of delivery and furthermore, that should such request not receive prompt attention that action be *taken* by the executive committee to bring this matter in a prominent way before the Interstate Commerce Commission and such other state bodies as may have control of these matters and this association requests co-operation of other associations to that end.

Resolved, That the thanks of this association be expressed to the Columbus Granite Brick Co. for the courtesies it has extended to us and its handsome souvenir buttons; also that we express our appreciation of the good services of our officers during the past year, the work of the Insurance Committee and co-operation of those who have contributed so ably to our program, thereby making the convention one of the most successful we have held.

Resolved, That the thanks of this association be given to the Chittenden Hotel and its courteous manager, Nicholas A. Court, for the use of the exhibit room and convention room and also for his general assiduity in promoting our general comfort.

Resolved, That this association specially recognizes the support of J. Y. Bassell, secretary of the Board of Trade of Columbus, and realizes that he has made good on his promise of last year.

Resolved, That the association publicly thank T. M. Marriott, the Columbus architect, whose broad-minded paper expressed so ably the true relations which should exist between the architect and the sand-lime brick manufacturer.

H. DE JOANNIS, *Chairman*,
W. E. PLUMMER,
W. J. CARMICHAEL.

Adopted as read.

Mr. Squier: As I remember, it was intended that that part of the resolution which refers to coal, lime, etc., a copy of that resolution or a request that the other associations act upon it—was to be embodied in the resolution; in other words, that we were to request other brick organizations and any organizations meeting in convention, to adopt the same resolution in spirit and intent and purpose. Wasn't that the idea?

The President: I think it was.

The Secretary: I didn't understand that. I understood that the resolution would be prepared; that the Secretary would then be instructed according to the desires of your Association to submit a copy of the particular resolution.

Mr. Penfield: Speaking to that same resolution, I think there is a misapprehension or a misunderstanding as to the facts in the case as covered by a wide range of territory. It was my understanding that in some sections they already have laws requiring the individual weighing of cars and that they are not permitted to be weighed in connection. I also understand that the railroads—or, rather, the shippers of coal, adopted the practice of railroad way billing according to the nearest railroad scale, not because they don't have scales themselves in all cases, but because there are some cases that don't have them, and in many cases in which the railroad companies don't have scales at the destination; and it has been an agreed arrangement between the railroads and the shippers that the weights obtained at the nearest railroad scale from the point where the shipment originates might be applied. That is true in Ohio. I have understood that there was a western ruling requiring all cars to be weighed separately. I think you will find pretty nearly all Ohio cars are weighed disconnected.

Mr. Batley: The Western Association demand all cars to be uncoupled and remain still until the loaded weight is taken.

Mr. Squier: I know that that is the rule; but it is not the practice. I myself have seen the trains go over and the cars were not detached. But the gentleman with the scales kind of blocked it up and down and made some marks and blocked it up and down; and you could guess as to the actual weight of the cars.

The other point is, that the cars should not be weighed at the point where it starts, but at the point of destination or the nearest scales to the point of destination; and that is what we want. We want the coal we pay for and that we don't get.

The President; As I understand, you want to add another clause to the resolution, to the effect that the Association requests the co-operation—am I right?—of other associations.

Mr. Squier: That is the idea.

The President: Gentlemen, you have heard the resolution; are you ready for the question? Any further remarks? All those in favor of the resolution as it stands, with the amendments, signify by saying Aye; contrary, No. The resolution is passed.

The next is a report of the Committee on Nominations. Mr. Squier, I believe, is the chairman.

Mr. Squier: Mr. President, Gentlemen: Your committee begs to recommend the following gentlemen to serve as the officers, as I shall read them: For President, H. O. Duerr; Vice-President, F. H. Smith; Secretary, Fred. K. Irvine; Treasurer, W. E. Plummer. Being of the committee, I would rather not move in the matter.

Mr. Jackson: I make the motion that the report of the committee be adopted, and the officers as recommended by the committee be elected for the ensuing year. Seconded by de Joannis. (Carried.)

(Mr. Squier takes the chair, temporarily.)

Chairman Squier: One minute. Mr. Jackson, if I got your remarks right, you purpose to have one ballot cast. Is that the idea?

Mr. Jackson. One ballot. Let the Secretary cast the ballot for the officers as recommended by the Nominating Committee.

Chairman Squier: Mr. Jackson asks the unanimous consent of the Association that the Secretary cast one ballot for the officers as named by your committee. Is there any objection to that?

The President: There is. I put Mr. Squier on the Nomination Committee as chairman, thinking that I could control him; and I told Mr. Squier distinctly that I didn't wish to serve as President for another term. Not that I don't enjoy the game; but I feel that there are others who should take that position and that the labors should be divided. Mr. Squier seemed to think that there were some matters in hand which made it desirable for me to go on; and although I know I am getting into trouble when I get home by accepting it, there is one condition on which I am glad to accept it, and that is, that the members will give their support. It is impossible for any of the authorities of this Associa-

